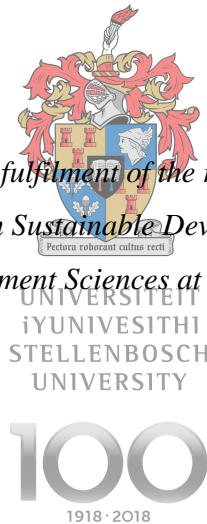


Education for Sustainable Futures: an appropriate approach for early childhood development from birth to five years

by

Nomandla Bongoza

*Thesis presented in partial fulfilment of the requirements for the degree
of Master of Philosophy in Sustainable Development in the Faculty of
Economic and Management Sciences at Stellenbosch University*



Supervisor: Eve Annecke

March 2018

DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: March 2018

Copyright © 2018 Stellenbosch University

All rights reserved

ABSTRACT

The 21st century is marked by numerous challenges ranging from environmental degradation, resource depletion, pollution, poverty and inequality to poor education outcomes especially in the global south. This study explores a system of learning that seems to integrate ECD training/curricular with the principles of sustainable development. While it is conceivable in theory, I attempted to explore how the thinking in sustainable development translates into practice in the early learning space. The research was done by means of a literature review and practical research conducted at two early learning centres in Cape Town (Lynedoch Children's House and GROW with Reaching Stars in Khayelitsha).

This study employed qualitative research approach using ethnographic participant observation, literature review and case studies. The data was analysed using qualitative content analysis. The literature reviewed highlighted the benefits of starting early in terms of instilling values of sustainable development in children. The benefits align with the sustainable development basic principles that recognise the unbreakable connection between social and economic development tied to environment conservation and care. Additionally, children who are connected to the environment may well have a predisposition to care for the environment throughout life. Literature also revealed that children are capable of being agents of change and they understand issues related to inequality. Even though the concepts of sustainable development are seen to be challenging to introduce at an early childhood development level, research shows that children are capable of exploring and understanding complex issues. Quality learning, learning in context and education for sustainable development were the overarching themes in the literature reviewed.

Using a participant observation research method I observed two case studies in Lynedoch and Khayelitsha. The case studies were chosen for explorative study of the two different contexts of learning that provide different perspectives in learning for sustainability. The Khayelitsha school uses a method that greatly focusses on the cognitive development of a child a dominant method in South African early learning space. Lynedoch Children's House uses Montessori Method of education that has been reported to be one of the methods that embody principles of sustainable development. The method recognises that the environments that children are

exposed to positive or negative have far reaching effects on their future. There is a need to re-educate ourselves in order to change the trajectory in which we are found. Humans need education that helps us become better people who care for one another, other living things, the environment and where humanity can realise its aspirations.

The findings from both case studies is the importance of early learning that provides holistic development of a child, connection to nature, child centeredness, and connection with other humans and living things. Learning in context was also identified as one of the key factors that drive quality learning and Education for Sustainability. There is a need to find local solutions to global problems. A way forward in finding solutions with the education crisis in South Africa lies in collaboration, support and investment in early childhood development. There is no denying the value of introducing education for sustainability in early childhood development. Sustainable Development Goals promote the attainment of life skills and knowledge needed to promote sustainability through education. I have used these goals as the international framework for my study. Moreover, three factors will drive the successful implementation of the Sustainable Development Goals: people (the individual and communities that promote sustainable lifestyles), the environment (urban and rural and connection to nature) and method of learning (how it speaks to the nature of a child and his/her capabilities).

OPSOMMING

Die 21ste eeu word, veral in die globale suide, gekenmerk deur talryke uitdagings wat omgewingsagteruitgang, hulpbronuitputting, besoedeling, armoede, ongelykheid en onvoldoende opvoedingkundige uitkomstes insluit. Hierdie studie ondersoek 'n onderrigraamwerk wat poog om opleiding verbonde aan ontwikkeling in die vroeë kinderjare te integreer met die beginsels van volhoubare ontwikkeling. Alhoewel die voorgenoemde onderrigraamwerk teoreties gekonstrueer kan word, is daar gepoog om te verken hoe die denkwyses verbonde aan volhoubare ontwikkeling ontvou in die praktiese sfeer van die vroeë onderrigmilieu. Navorsing is gedoen deur middel van 'n literatuurstudie asook 'n praktiese navorsingsondersoek by twee onderskeie vroeë onderrigsentrums in Kaapstad (naamlik Lynedoch Children's House en GROW with Reaching Stars in Khayelitsha).

Hierdie studie het 'n kwalitatiewe navorsingsbenadering aangewend deur die gebruik van etnografiese deelnemerwaarneming, 'n literatuurstudie en gevallestudies. Die data is ontleed deur die gebruik van kwalitatiewe inhoudsanalise. Die literatuurstudie het gedui op die voordele van 'n vroegtydige begin in die aanwakkering van die waardes van volhoubare ontwikkeling by kinders. Hierdie voordele staan in lyn met die grondliggende beginsels van volhoubare ontwikkeling wat die onmisbare verbintenis tussen sosiale en ekonomiese ontwikkeling geheg aan omgewingsbewaring en sorg erken. Verder het die literatuur aangedui dat kinders met 'n verbintenis tot die omgewing 'n lewenslange geneigdheid mag hê tot sorgsaamheid teenoor die omgewing, dat hulle oor die vermoë beskik om agente van verandering te wees en dat hulle kwessies verbonde aan ongelykheid verstaan. Alhoewel dit uitdagend mag blyk om op die vlak van ontwikkeling in die vroeë kinderjare kinders bloot te stel aan die begrippe van volhoubare ontwikkeling, wys die navorsing dat kinders in staat is daartoe om komplekse kwessies te ondersoek en te verstaan. Deurlopende temas in die literatuur wat nagegaan is, sluit in kwaliteit onderrig, onderrig in konteks en opvoeding vir volhoubare ontwikkeling.

Deur die gebruik van die deelnemerwaarnemings-navorsingsmetode is twee gevallestudies onderskeidelik in Lynedoch en Khayelitsha waargeneem. Die gevallestudies is gekies vir 'n verkennende studie van twee verskillende kontekste van onderrig wat verskillende perspektiewe bied op onderrig verbonde aan volhoubaarheid. Die skool in Khayalitsha gebruik 'n metode wat grootliks fokus op die

kognitiewe ontwikkeling van 'n kind en wat 'n dominante metode in die Suid-Afrikaanse vroeë onderrigmilieu is. Lynedoch Children's House gebruik die Montessori Metode van onderwys, een van die metodes wat die beginsels van volhoubare ontwikkeling beliggaam. Die metode erken dat die omgewings waaraan kinders blootgestel word positiewe of negatiewe faktore bevat wat verreikende gevolge het op hul toekoms. Om die baan waarin ons onself bevind te verander is daar 'n behoefte aan her-opvoeding. Mense benodig opvoeding wat ons help om beter mense te word wat sorg vir mekaar, ander lewende dinge, die omgewing en ons help om die doelstellings van die mensdom te realiseer.

Bevindinge van beide die gevallestudies dui op die belangrikheid van vroeë onderrig wat die volgende tot gevolg het: die holistiese ontwikkeling van die kind, 'n verbintenis met die natuur, kind-gesentreerdheid en 'n verbintenis met ander mense en ander vorme van lewe. Onderrig in konteks is geïdentifiseer as een van die sleutelfaktore wat 'n dryfveer is vir kwaliteit onderrig en Opvoeding vir Volhoubaarheid. Dit is noodsaaklik dat plaaslike oplossings vir globale probleme gevind word. Die vind van oplossings tot die opvoedingskrisis in Suid-Afrika, lê in samewerking, bystand en investering in ontwikkeling in die vroeë kinderjare. Die waarde van die bekendstelling van Opvoeding vir Volhoubaarheid tot ontwikkeling in die vroeë kinderjare kan nie ontken word nie. Die Volhoubare Ontwikkelingsdoelstellings promoveer die aanleer van lewensvaardighede en kennis wat benodig word om volhoubare ontwikkeling deur opvoeding te bevorder. Hierdie doelstellings dien as die internasionale raamwerk vir die studie. Drie sleutelfaktore sal dien as die dryfvere vir die suksesvolle toepassing van die Volhoubare Ontwikkelingsdoelstellings: mense (die individue en gemeenskappe wat volhoubare lewenshoudings bevorder), die omgewing (die stedelike en landelike omgewing en verbintenis tot die natuur) en onderrigmetodiek (hoe dit spreek tot die vermoëns en aard van die kind).

ACKNOWLEDGEMENTS

I would like to thank the following people who made the completion of this paper possible:

Eve Annecke for not giving up on me.

Helene Lambrechts for the encouragement, support and for being there during the most difficult times of my life.

To Naledi Mabeba and Grace Mtshengu thank you for allowing me time to learn at your schools and reminding me there is hope for Education in South Africa.

Jakob and Livy for being the best guides I could ever ask for.

To my family for the love and support, especially my mother Lillian Bongoza who continuously prays for me.

Most importantly to God who sustained me to this end.

TABLE OF CONTENTS

DECLARATION	i
ABSTRACT.....	ii
OPSOMMING	iv
ACKNOWLEDGEMENTS	vi
TABLE OF CONTENTS.....	vii
LIST OF ACRONYMS AND ABBREVIATIONS	x
LIST OF FIGURES	xi
LIST OF TABLES	xii
THESIS OUTLINE.....	1
CHAPTER 1	2
INTRODUCTION	2
1.1 Introduction.....	2
1.2 Motivation and significance	6
1.3 Value of research	9
1.4 Research objectives and questions	9
1.5 Limitations of the study	10
1.6 Ethical considerations	10
1.7 Definition of concepts	11
1.8 Conclusion	12
CHAPTER 2	14
RESEARCH METHODOLOGY: A QUALITATIVE APPROACH	14
2.1 Introduction.....	14
2.2 Qualitative approach	14
2.2.1 Literature review	15
2.2.2 Case study	16
2.2.3 Participant observation	18
2.2.4 Unstructured interviews.....	19
2.3 Summary of the case study protocol.....	22
2.4 Conclusion	23
CHAPTER 3	24
LITERATURE REVIEW	24
3.1 Introduction.....	24
3.2 Sustainable development.....	25
3.2.1 Environmental.....	26
3.2.2 Economic	27
3.2.3 Social.....	28
3.3 Decade of Education for Sustainable Development	29
3.4 Education for Sustainability (EfS).....	32
3.5 Key features/elements of Education for Sustainability (Efs)	33
3.6 Systems thinking.....	35
3.7 Early Childhood Development	36
3.8 ECD in South Africa	38
3.8.1 Poverty	38
3.8.2 Living conditions	39
3.8.3 Teacher education and training	40
3.8.4 Health	41

3.9 Nature Deficit Disorder	41
3.10 A way forward: collaborative effort	44
3.11 The Montessori approach	45
3.11.1 The environment	47
3.11.2 Independence	47
3.11.3 State of becoming	48
3.12 Conclusion	49
CHAPTER 4	50
CASE STUDIES	50
4.1 Introduction	50
4.2 Setting the context	51
4.3 Khayelitsha- GROW with Reaching Stars Educare Centre	52
4.3.1 The community	52
4.3.2 The school environment- setting the scene	54
4.3.3 Method of instruction	56
4.3.4 Parental involvement	57
4.4 Lynedoch Children's House	58
4.4.1 The community	58
4.4.2 The environment- setting the scene	60
4.4.3 Method of instruction	62
4.4.4 Parental involvement	65
4.5 Making the connections	66
4.6 Conclusion	67
CHAPTER 5	69
EMERGING THEMES	69
5.1 Introduction	69
5.2 Missed opportunity for lifelong quality learning	70
5.3 Hope education	72
5.4 I care for the environment and animals	73
5.4.1 I care for the environment	74
5.4.2 I care for animals	75
5.5 Quality education	75
5.6 Value of parental involvement	77
5.7 Trained practitioners/teachers	78
5.8 School readiness	78
5.8.1 Access to quality ECD	79
5.8.2 Pathways of learning	80
5.9 Mentoring and support- the intervention	80
5.10 Community engagement- the value of collaboration	82
5.11 Conclusion	83
CHAPTER 6: CONCLUSIONS	84
6.1 Introduction	84
6.2 A reflection on sustainable development goals	84
6.3 QUESTION 1: what is it that makes a quality environment?	87
6.3.1 Physical space	87
6.3.2 People	88
6.3.3 Curriculum/site learning program	89
6.4 QUESTION 2: explore the role of the physical (indoor and outdoor) environment in children's development?	91
6.4.1 Nature Deficit Disorder	91

6.5 QUESTION 3: whether the Montessori Method makes sustainable development explicit in early childhood development?	92
6.5.1 Order in environment and mind	92
6.5.2 Learning in context.....	94
6.6 QUESTION 4: explore the impact of a learning environment that embodies the Montessori principles.	94
6.6.1 Freedom within limits	94
6.6.2 Unlearning and learning.....	95
6.7 Recommendations (for both case studies, NGOS, and government)	96
6.7.1 Investment in ECD	96
6.7.2 Parental involvement	96
6.7.3 Curriculum design	97
6.7.4 Place based learning.....	97
6.8 Suggestions for further research.....	98
6.8.1 Finance	98
6.8.2 Food/nutrition	98
6.8.3 Role of technology.....	98
6.8.4 Role of nature in ECD	99
6.9 Chapter conclusion.....	99
APPENDIX A: Interviews at the Lynedoch Children's House and GROW with Reaching Stars	102
APPENDIX B: Selected quotes from the Lynedoch Eco Village and Khayelitsha Site C case study.....	103
Appendix C: Selected images of The Lynedoch Eco Village and Site C..	104
REFERENCES	105

LIST OF ACRONYMS AND ABBREVIATIONS

DESD	Decade of Education for Sustainable Development
DSD	Department of Social Development
ECD	Early Childhood Development
ECE	Early Childhood Education
EfS	Education for Sustainability
ESD	Education for Sustainable Development
GDP	Gross Domestic Product
HIV/AIDS Syndrome	Human Immunodeficiency Virus / Acquired Immunodeficiency
LDC	Lynedoch Development Community
NCF	National Curriculum Framework
NELDS	National Early Learning Development Standards
NGO	Non-governmental Organisation
RDP	Reconstruction and Development Programme
SD	Sustainable Development
SDSN	Sustainable Development Solutions Network
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural
UNSDSN	United Nations Sustainable Development Solutions Network

LIST OF FIGURES

Figure 3.1: Visual Representation of the Model of Sustainable Development	26
Figure 3.2: On Rights and Realities: Building a System of Services for Young Children: Presentation on ECD	35
Figure 3.3: Stages of early childhood development	37
Figure 4.1: Khayelitsha school- GROW with Reaching Stars	54
Figure 4.2: Lynedoch Children's House	60

LIST OF TABLES

Table 2.1: Key Features on how data will be presented	21
Table 2.2: Summary of the Case Study Protocol	23
Table 3.1: Sustainable Development goal 4 linkages to education	30
Table 3.2: Key Features / Elements of Education for Sustainability (Efs)	34
Table 4.1: Principles informing the National Curriculum Framework	57
Table 4.2: Eight Principles of Montessori Education	65
Table 5.1: Trans-Global Principles of Quality Early Childhood Development	76

THESIS OUTLINE

CHAPTER 1 INTRODUCTION

Is the introductory chapter that covers the introduction to the study, motivation and its significance, value of research, ethical considerations, limitations to the study and the definition of concepts.

CHAPTER 2 RESEARCH METHODOLOGY - A QUALITATIVE APPROACH

Details the methodology used in the study. The methodology includes literature review and practical research.

CHAPTER 3 LITERATURE REVIEW - EDUCATION FOR SUSTAINABLE FUTURES

Reviews literature on sustainable development, education for sustainable development including Sustainable Development Goals, Early Childhood Development in South Africa, the Montessori pedagogy and Nature deficit disorder.

CHAPTER 4 CASE STUDIES - LYNEDOCH AND KHAYELITSHA

Covers the practical research of the study through interviews and observations.

CHAPTER 5 EMERGENT THEMES

Is the data analysis chapter drawing connections and emerging themes of the practical research and literature.

CHAPTER 6 REFLECTIONS, RECOMMENDATIONS AND CONCLUSION

Draws conclusions on the practical research making connection to the literature reviewed in chapter 3 and makes recommendations and outlines further areas of study.

CHAPTER 1

INTRODUCTION

1.1 Introduction

“THERE CAN BE NO KEENER REVELATION OF A SOCIETY’S SOUL THAN THE WAY IN WHICH IT
TREATS ITS CHILDREN”

(Nelson Mandela, 1995)

There is growing recognition of the value of formative years of life for building sustainable societies in the global development frameworks (Britto & Sherr, 2016). Quality Early Childhood Development [ECD] programmes have demonstrated positive impact on the child, family and societal outcomes. The early years are the most crucial years to introduce education for sustainable development, thereby instilling values that are aligned with care and stewardship for the planet. We live in times of instability, complexity, rapid change and high inequality, coupled with climate change and loss of biodiversity, resource depletion and unsustainable consumption (Hagser & Sandberg, 2017). Research shows that children understand these challenges and are able to be agents of transformative change towards a more sustainable world and a way of living. With the recognized potential on the investment in ECD and the urgency to do so, Lancet Series (2017) reports that an estimated “200 million children younger than five years old in low and middle-income countries, were at elevated risk of not reaching their human potential” (Richter, Daelmans, Lombardi, Heymann, Boo, Behrman, Lu, Lucas, Escamilla, Dua, Stenberg & Gertler, 2016). Despite the growing recognition and appreciation of ECD as a determinant for individual and community wellbeing, large backlogs remain in resources for poor communities in South Africa, with serious limitations as far as government assistance. (Van der Walt, Swart & De Beer, 2014).

Twenty-two years into democracy, the “majority of young children in South Africa are still negatively impacted by a range of social and economic inequalities, which include inadequate access to education, social services and nutrition” (Atmore, 2013:152). The state of education for the poor and disadvantaged continues to undermine children’s development. Salisbury (2015) reports that there have been large-scale educational reform efforts in SA in the past two decades, which have brought enrolment rates in primary school across races close to parity and redirected expenditure to poorer regions of the country. However, the investment in education has not yielded much success in terms of closing the yawning gap of economic

inequality. Early Childhood Development has taken ground on debates around improving education outcomes in South Africa. The research done in the ECD space highlights a sense of urgency that cannot be ignored. More than a million children are born in South Africa every year, with an immediate priority to provide essential components of ECD services for all young children particularly the poor (Hall, Sambu, Berry, Giese, Almeleh, & Rosa, 2016).

The National Department of Education defines ECD as “the process by which children from birth to nine years of age grow and thrive physically, mentally, emotionally, morally and socially” (Atmore, 2012:122). ECD encompasses the different aspects involved in the development of the child, family, community, schools/care centres. At these early stages, children need to be nurtured to be able to grow into adults that will contribute to the development of a nation. There are different aspects that influence or add values to a child’s development and these cannot work in isolation. According to a report published in 2012 by Ilifa Labantwana (an organisation that works to ensure an equal start for all children living in South Africa through universal access to early childhood development), the provision of early childhood development services is a development priority in South Africa with the government aiming to scale up services for young children giving priority to the poorest and most vulnerable children.

The status of early childhood environments mirrors the conditions in which poor South Africans find themselves. Inequality in SA has continued to rise since the end of apartheid, with about 18.5 million children living in households that earn less than R3 000 per month. The gap between the rich and the poor is widening (Aubrey, 2017). There are circumstances where preschool environments have little or no learning, becoming what one would call places of safety/child minding. This is a loss to a nation as research reveals that if nothing is done to support the development of a child before the age of six, the individuals are likely to spend the rest of their lives catching up in terms of their development. “The most cost-effective time to intervene is before birth and the early years” (Department of Basic Education, 2015:3).

The benefits of proper investment in ECD are enormous not only for the children’s sake, but for the adults they will become, and the contribution they will make in the development of the country. ECD is a strong predictor of adult health and productivity, and can contribute to an achievement of an equitable future. Biersteker, Dawes, Hendricks & Tredoux (2016) found that better quality early childhood

education (ECE) predicts better schools' outcomes which promotes mathematics and reading readiness in low income children. Additionally, Desmond (2016) presented that quality ECD outcomes includes better school performance, and potentially better earning and employment prospects. It seems obvious that ECD is one of the smartest investments a country can make for a prosperous future. Evidence from both developed and developing countries suggests a potential return in productivity of 7-16 percent annually from high quality preschools, particularly ones targeting vulnerable groups.

Investment in ECD also ensures that children stay longer in school and have 5-50 percent higher incomes as adults, and are 33 percent more likely to escape poverty (Hansen, 2016). According to the Young Lives policy brief (2016) investing in ECD is not only critical but cost effective. Furthermore, the outcomes of education in South Africa supports the discussions on the importance of ECD as the country has reached national crisis in terms of school dropout rates especially at secondary and tertiary educational levels, where "approximately 60% of first graders will ultimately drop out rather than complete 12th grade" (Weybright, Caldwell, Xie, Wegner & Smith, 2017). Grossen, Grobler and Lacante (2017). The report by Weybright et al. (2017) reveals that only 75% of those who took grade 12 exams passed and about 18% of them qualify for university entrance. The response to the high dropout rate is to focus on improving learner performance in the foundation phase (grade R to 3). Although research proves the early age is the best place to address the educational problems experienced in primary and later on in school years has not been evident in the implementation of solutions by SA government.

There are myriad of challenges facing education of young children in South Africa, amongst many are poor quality teacher development, low levels of parental involvement, and poor learning environments. Steyn, Harris & Hartell (2016) add that "early childhood education (ECE) is affected more severely by a serious shortage of well-trained, qualified teachers at this level". As stated earlier there have been major developments in ECD landscape however quality remains a problem (Pitt et al, 2013). There are schools that operate in a first world environment and others that survive under conditions that no children should find themselves, characterised by lack of learning resources, physical space deprivation, crime and pollution to name just a few. Additionally, the issue of historical neglect features in all debates surrounding the provision of education in South Africa. The latter undermines the

Department of Social Development's mandate to create an environment where children thrive in all aspects of their lives (Atmore, 2012).

Whether translated into practice or not, there is a consensus on the importance of quality ECD on a global level. Transforming our world: the 2030 Agenda for Sustainable Development, is the official name for the Sustainable Development Goals (SDG's), which are 17 goals with 169 targets between them, spearheaded by the United Nations and adopted in 2015 (sustainabledevelopment.un.org, 2015). According to the Lancet Series (2017), "the first Sustainable Development Goal is to ensure that all human beings can fulfill their full potential in dignity and equality" (Richter et al, 2016). Protecting, promoting and supporting early childhood development is essential to enable everyone to reach their full human potential. Le Blanc (2015), found the internationally agreed goals have both political and instrumental value. These goals can be enforced at both a local and international level. However, the effective implementation lies in recognizing the uniqueness of different regions. The SDG's cover an extensive range of sustainable development issues and provide a framework on how sustainable development can be achieved in global development discussions, plans and programmes.

The concept of SD has been heavily criticised for reasons that will be discussed further in the paper, however amongst many is its definition. According to Palmer and Flanagan (2016), the most agreed on definition of SD is "meeting the needs of the present without compromising the ability of the future generations to meet their own". The definition has been said to be ambiguous and allows for business as usual without major implications for those who continue to pollute the environment whether human or natural. Eneh (2009), maintains that sustainable development can be achieved by adopting dynamic education and the alternatives that lie before us, these alternatives can be envisioned and taught to people in order to unravel transformations and reconstructions for a better future.

Furthermore, Gadotti (2016) argues that "education effort should encourage changes in behaviour in order to create a more sustainable future in terms of the integrity of the environment, economic viability and fair society for present and future generations". Therefore, education for sustainability demands a re-examination of educational policy for reorientation of learning from preschool to university. The fundamental change of behaviour and connection with the planet can be enforced during the early years of life. As previously alluded, the investment in quality

education has a greater impact for a country's future. Education for sustainability is a paradigm that puts citizenship and the creation of secure and resilient communities at the centre of teaching practice (Santone, Saunders & Seguin, 2014). This allows for every person to take responsibility for finding ways to unlearn the destructive patterns we adopted in relation to the planet. For Wensing & Torre (2009), sustainability means that as a society, we are aware of the impact our actions have on others and on the planet, and that we take responsibility for these actions and are transparent in our processes.

In light of the preceding arguments, this study explores a method or system of learning that integrates early childhood and sustainable development. While it seems clear that it is logical to link the two, the key motivation is to attempt to provide a study that demonstrates that this connection of theory and practice may indeed be possible.

1.2 Motivation and significance

Children are the greatest resource upon which the future of the world centres. In the words of Nelson Mandela, “education is the most powerful weapon which you can use to change the world”. Addressing educational challenges requires a collective effort from government, households and businesses. In a society that has been historically divided across colour lines, culture and social status, quality early childhood education can provide diversity and facilitate the development of a more equitable form of multiculturalism (Williams et al, 2011). Moreover, ECD has been proven a driver of economic, educational and ecological development. The Lancet Series (2017) on SD and ECD explored the value of ECD during the course of life. Two key themes were explored. The first was that the epigenetic, physiological and psychological adaptations to the environment develop from inception and that they affect development throughout life (Richter et al, 2016). Secondly, evidence on long-term outcomes from low-income and middle-income countries (developed) a program to increase cognitive development of stunted children in Jamaica 25 years ago (Richter et al, 2016). This resulted in increased adult earnings by 25%. This outcome was achieved by providing quality early childhood care to stunted children from 2 years to school going age (Lo, Das & Horton, 2016). However, Britto and Sherr (2016) found that despite the voluminous evidence of major returns on ECD investment, programmes for young children are amongst the most underfunded and there appears to be a gap between evidence and investment. There is a need for

forward thinking as the—unlimited potential of early years call for a system or an approach that recognises this opportunity not only in policy papers but in practice.

ECD as a foundation for sustainable futures requires much greater attention, it is at this stage that our education system can introduce the principles of sustainable development. Albino and Berry (2013) support that a nation that invests in its youngest citizens show wisdom and forethought and can therefore be assured of a promising future. The starting point for a discussion around issues related to sustainability should be in childhood. Although some believe the subject matter is not easily translated into material that children can engage with, I believe it is possible to introduce the thinking and value systems early on in life. How individuals think about sustainability is rooted in their education (Fisher & McAdams, 2015). Gadotti (2016) believes that sustainability presents a dream of living well, and sees it as dynamic balance with others and the environment, a harmony among the differences. Hagser & Sandberg (2017) added that education on sustainability has to acknowledge the interconnection between individuals, their place in society and their nature as biological beings.

On his paper on Education for Sustainable Development, Eneh (2009) writes on the importance of education. He argues that “man has used education as a very important instrument for transformation and reconstruction of his environment, and education leads a learner to the fullest, truest, noblest and most fruitful relationship with the world” (Eneh, 2009:144). In order to transform the world, the best place to start is with young children, as research shows the formative years are the most crucial years where identities are formed and value systems that will likely affect the person’s whole life. According to Palmer & Flanagan (2016) sustainability is not just good to do, but imperative to do. On the other hand, McDonald (2015) found that teaching children about sustainability is proving difficult. Providing children with content related to sustainability is a step in the right direction, but requires modelling and careful planning of experiences that provoke thinking and learning in relation to school, family and community. It is imperative that the learning is context specific and speaking to the needs and experiences of each community. Internalizing sustainability as an intrinsic part of moral agency is something that should be started during preschool years (Eriksen, 2013).

McDonald (2015) argues that “sustainability is about seeking co-existence that is not only ecological, social or economic but also marked by collaborative discourses

between and among children that lead to mutual engagement and reciprocity in teaching and learning". The value of school, family and community should be at the heart of sustainability thinking.

Exploring my interest in ECD, it started after getting involved in a community playgroup program in 2011 run by Prochorus, an NGO based in Kayamandi, Stellenbosch. The program's specific aim was/is to help (through a playgroup) children whose parents cannot afford to send them to a preschool/crèche but are available throughout the day to look after them either by choice or lack of employment opportunities. As I worked with the children I started appreciating and engaging with the ideologies or thinking around early learning. Over time my interest in children, particularly zero to six years, strengthened and I explored questions as to what my role would be in addressing some of the challenges in the ECD space in Kayamandi. The inspiration also comes from personal childhood learning experiences. My learning gaps and deficits still influence how I associate with education and learning in general. It is my passion to explore alternative education methods that speak to an African child. Most importantly, it is my hope and life dream to ensure that no child has to struggle as I did.

In 2013, I began my postgraduate diploma at the Sustainability Institute. As part of my course work for Sustainable Development module, I was tasked with presenting on ECD. Part of the presentation was observing and learning about the Montessori teaching method in the Lynedoch Children's House. The centre caters for zero to five-year olds and is run in accordance with a carefully crafted pedagogy that fuses Montessori education with eco-literacy (Annecke and Swilling, 2011). I met the Montessori teaching method with skepticism, as I *assumed* that it could only work for *wealthy communities*. The materials or resources required for running a Montessori school are expensive and therefore schools from poor communities may be reluctant to use the method. However, Lillard (2013) highlights such an assumption when she writes that some people assume that Montessori education is costly and exclusive and therefore unworthy of consideration in discussions about public education. But I soon learnt that the method was initially developed for children in slums of Rome (Lillard: 2013). As such, if Dr Montessori was able to apply the method in a much poorer context, perhaps it would also be applicable in poor communities in South Africa.

1.3 Value of research

My hope is that the study will make a useful contribution to the early childhood learning environment where the research will be conducted and add value to the body of research on ECD in South Africa. Additionally, the aim is to supplement the developmental and transformative thinking on early learning education with the specific focus on pedagogies that are context specific. Montessori education is not prominent in poor communities and only attempted by a select few. This study could help encourage the establishment of Montessori preschools in disadvantaged communities or the adoption of the Montessori principles into the learning instructions or in the long run cultivate teaching that is child centred. The research comprises of two case studies, Lynedoch Children's House and GROW with Reaching Stars Educare Centre in Khayelitsha Site C. Adding value to children's learning will happen when the adults who care for them are transformed in their thinking and start to embrace new pathways of learning. It is my hope that those I have touched during my research process will continue learning and growing in their pursuit for quality education in South Africa. Furthermore, ECD centres are run by NGO's and private individuals therefore provide a less rigid platform to implement new/alternative methods of education. The time is now to set foundations that will lead to an equal and livable future and sustainable future.

1.4 Research objectives and questions

Research questions

1. What it is that makes a quality learning environment?
2. The role of the physical (indoor and outdoor) environment in children's development.
3. Whether the Montessori Method makes sustainable development explicit in early childhood development.
4. The impact of a learning environment that embodies the Montessori principles.

Research objectives:

1. To participate in creating an active learning environment.
2. Observe two case studies for explorative purpose.
3. Participate in infrastructural upgrade and resource provision at GROW with Reaching Stars Educare Centre (one of the case studies for this paper).

4. To explore the implication of Sustainable Development goals in ECD as spearheaded by the United Nations and launched in September 2015.

1.5 Limitations of the study

Limitations to this study can be summed up into three areas, time frame, awareness of audience and cultural bias. Firstly, the nature of the research requires longer time periods in order to make a conclusion about the effectiveness of the program being implemented. Research time limits and critical review of the environment being studied as social settings are difficult to predict and control. Long-term observation can provide a complete data set about specific situations and event (Maxwell, 2012). A limitation to this study was the short time frame in which it was undertaken. It would have been beneficial to spend more time at both centres to get a complete picture with “less prepared participants”. Secondly, the method of enquiry makes it possible for observation to be manipulated as the sample audience maybe aware they are being observed. Knowing that one is observed alters their behaviour, no amount of familiarity with the researcher changed their behaviour and that may influence their behavioural patterns. However over time the participants were more relaxed and accustomed to my visits and presence. Lastly, I may conclude or interpret the participant’s behaviour based on my personal or cultural bias. Mehra (2002) regards the awareness of ones biases and blind spots as high a priority in research and theoretical knowledge. An invested interest in the improvement of ECD centre in poor communities might cause one to pursue an agenda that is in line with my needs or what I believe needs to be done. For example, in my interaction with Educare teachers consciously or not, I may use rank to drive people to the direction that I want. Nonetheless, I believe “man convinced against his will is of the same opinion still” –Unknown. As an observer it is difficult to control or even predict how the participants will behave in any given moment, the most important thing to do is explain your role and what it entails.

1.6 Ethical considerations

Patten and Bruce (2009) states in research it is imperative that the participants are protected from both physical and psychological harm. It is the responsibility of the researcher to ensure that participant’s interests come before the need to gather information or learn from them. Participants have a right to privacy, confidentiality,

consent, and knowledge of the purpose of the research before they participate (Patten & Bruce, 2009). Additionally, Kumar (2014) writes that there are many stakeholders in research and therefore it is important to look at ethical issues in relation to each. The research is designed to ask confidential information from teachers and parents that requires honesty and could influence the kind of response or data collected. Additionally, the presence of the observer could constitute a distraction to the children and may inhibit learning. I was not directly working with the children and only allowed to observe when the teacher was in the classroom.

The study adheres to the following rules:

1. Signed consent forms from principals and teachers (with specific instructions about my role as an observer).
2. Participant's choice not to participate in the research will be respected.
3. The study will be conducted in a natural environment.
4. Rights to anonymity will be upheld.
5. I adhered to the rules and regulations as stipulated by the Department of Social Development (DSD).

1.7 Definition of concepts

The following are the key concepts covered in the study.

Early Childhood Development

The National Department of Education defines early childhood development (ECD) as “the processes by which children from birth to nine years of age grow and thrive physically, mentally, emotionally, morally and socially” (DoE, 2001a). Early childhood Development is recognised as the foundation for success in future learning. (Atmore, 2013)

Sustainable development

Sustainable development is “development that meets the needs of the present without compromising the needs of the future generations to meet their own needs” (Emas, 2015:1).

Education for sustainable development

According to Ventakaraman (2011) education for sustainable development encompasses environmental education but sets it in a broader context of socio-cultural factors and socio-political issues of equity, poverty, democracy and quality of life. Hopkins and McKeown (1999) add that sustainable development education by its nature is holistic and interdisciplinary and depends on concepts and analytic tools from a variety of disciplines.

Nature deficit disorder

Nature deficit disorder is not a medical term. Louv (2011) defines it as “a description of the growing gap between human being and nature with implications for health and well-being”

Educare

Educare is defined as organised and supervised services with social and educational goals for children in temporary absence of their parents. (Smith, 1996).

Education for sustainability

Education for Sustainability is defined “as a transformative learning process that equips students, teachers and school systems with the new knowledge and ways of thinking we need to achieve economic prosperity and responsible citizenship while restoring the health of the living systems upon which our lives depend” (cloudinstitute.org, 2018)

1.8 Conclusion

This chapter introduced ECD, and its value in driving sustainable development principles. Additionally, the positive impact of better investment in early years was highlighted and reported to benefit people’s productivity later on in life. The poor state of ECD for the majority of South Africa was also outlined. The motivation for the research was due to a personal development journey I undertook, which was by fate

met by the exposure to the Montessori preschool during the postgraduate study at the Sustainability Institute. I hope the research done in this area will add value to the body of research and continue to influence my personal future learning. The research questions and objectives were laid out and are to be further explored in the subsequent chapters. Additionally, time and the chosen method of research were identified as some of the key limitations for the research. Ethical considerations were observed in order to protect the participants and according to the university's requirements. The next chapter explores the research methodology undertaken in the research process.

CHAPTER 2

RESEARCH METHODOLOGY: A QUALITATIVE APPROACH

2.1 Introduction

The previous chapter introduced ECD, its potential and challenges and the current state of primary and secondary schooling in South Africa. The motivation for research was highlighted as a personal journey and an opportunity to explore the introduction of Montessori Method in disadvantaged communities. The aim of this chapter is to highlight the method of research that was used to explore the questions laid out in chapter 1. The process of research has two strands, literature review and case study research through a participant observation research method. The literature research is used to ground the thinking around Education for Sustainable Development, highlighting key themes that pertain to research questions. A qualitative ethnographic research method (participant observation) is discussed with a keen emphasis on the role of the researcher. The value and challenges of structured, unstructured and focus group interviews are highlighted as they were used for practical research. To conclude qualitative content analysis (QCA) is discussed as the method of data analysis that will be utilised in this study.

2.2 Qualitative approach

The study made use of qualitative research methodology, employing ethnography as the main research method complemented by other methods such as literature review, participant observation, unstructured interviews, focus groups, and content analysis. Mouton (2001) defines the ethnographic method as a “study that is usually qualitative in nature and that aims to provide an in-depth description of a group of people or community. Ethnography is a complex field of enquiry with historic and intellectual roots stretching over a millennium (Seymour, 2007). Moss and Richards (2002) found that qualitative methods are as challenging and demanding as quantitative methods, made so because they can and must be rigorous and can and should lead claims for conclusions that are defensible and useful. The research is largely based on a perceived view of the researcher and can be rigged with bias. Henning (2004) supports the view by stating that the researcher is explicitly the main instrument of research and makes meaning from her engagement of the project. Observing at both centres was challenging for a number of reasons. Firstly, the

relationships that were formed prior to the research, having these meant I had to refrain from being too personal, and yet not too distant. Secondly, my passion for education meant I had to refrain from trying to fix something just because I did not agree with how it is done. I needed to exercise a certain slowness and lookout for opportunities to understand, before making any suggestions.

There are questions that go deeper than ticking a box and life situations that can only be observed to be understood. Henning (2004:7) states in qualitative research we want to find out not only what happens but also how it happens and most importantly why it happens the way it does. Being in the space allowed me to observe real situations and ability to make conclusions and ask questions when needed. Qualitative research is more open, less structured than quantitative research, and not limited to predetermined questions (Blaxter, Hughes & Tight, 2002). Qualitative researchers aim to have study subjects to speak for themselves, to provide their perspectives in words and actions. It is an interactive and interpretive process in which the person studied teaches the researcher about their lives. The questions of why and how a particular instance or issue is addressed were addressed as they occurred. This provided a richer understanding of each participant and environment.

2.2.1 Literature review

According to Kumar (2014, 48) literature review is an integral step of research and makes an invaluable contribution to every area of the study. The aim of the researcher is to familiarise him/herself with the body of literature available that will add value to the research. Library books and peer reviewed articles were used to examine and familiarise oneself with the material available on the subject matter. I conducted literature survey to familiarize myself with published work on ECD, sustainable development, Education for sustainable development (ESD), Education for Sustainability (EfS), Montessori Method of Education and nature deficit disorder.

Remenyi (2012) argues that literature review is the basic underpinning of all academic research and demonstrates that the researcher is taking on the task of reviewing pertinent academic literature. The task is complex and the researcher has to constantly challenge any bias that might arise in terms of finding only information that supports his/her case. Kumar (2014, 49) adds that going through literature aids the researcher in establishing methods that have been used by others with similar

questions and therefore one can learn and avoid the same pitfalls experienced by those before.

Literature review is an essential part of research, and it is a careful review of literature pointing towards the answer to one's research questions. Henning (2004, 27) explains this process as whereby the researcher sets up a conversation and plays host, allowing speakers to enter a conversation, keeping it interesting and critical. This stage of research is selective, not comprehensive and the main purpose of the selective review is to sharpen the initial considerations regarding the topic (Yin, 2011). A more in-depth literature review was done after having identified the key areas of interest for the topic. Literature review helps establish the study in a nuanced manner and also assists focus on the research given the time and resource constraints. The observation process had to happen at particular times (mornings) so as to not obstruct school activities. However, Yin (2011) believes that although literature review gives light to the subject being studied it can also hinder or bias the study by creating an unwanted filter or lenses. Kumar (2014, 49) views the process differently, as he states that it assists the researcher understand the subject area better by doing so identifying areas of achievement and gaps, and helps the researcher focus hers/his study areas (Kumar, 2014:49). Additionally, Henning (2004:27) supports that literature review is used in the contextualisation of a study to argue a case and identify a niche to be occupied by the research.

2.2.2 Case study

Remenyi (2012:2) defines a case study "as an empirical inquiry that investigates a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident and in which multiple sources of evidence are used". The researcher immerses himself in the environment in order to learn the intricate and in-depth understanding that would otherwise be missed from asking a list of questions. Case study research is carried out within the boundaries of the social system or within the boundaries of a few social systems such as people and/or organisations (Swarnborn, 2010:12). The aim of selecting this method of research is to understand the case in depth in its natural setting, acknowledging its complexity and context (Maree, 2012). Human spaces and interactions are complicated and complex therefore requires different lenses to understand and an ability to appreciate the detail below the surface.

In case studies several sources of data collection are used. Data comes largely from documentation, archival records, interviews, direct observations, participant observations and physical artefacts (Zucker, 2009). According to Maree (2012), a case study can be regarded as an exploration or in-depth analysis of a bounded system or simple or multiple cases over a period of time. However, McCurdy & Uldam (2014) observed the downside of case study research pointing to the “risk of harming research subjects contaminating the participant pool, damaging research reputation, and closing off further avenues for research”. There are very thin lines that a researcher must tread in order to keep the peace and not upset or offend the participants. Gaining physical and emotional access to the group can prove challenging for an outsider (McCurdy & Uldam, 2014).

Case studies include single or multiple case designs depending on the context multiple case studies can provide confidence in findings generated from the overall study (Morgan, Pullon, Macdonald, McKinlay & Gray, 2016). It is also important to determine what kind of case study will be conducted. (Baxter & Jack, 2004). For this particular study research was conducted in two sites, the first was the Lynedoch Children’s House (Montessori preschool) as main research site. I gained access to the centre through its connection to the Sustainability Institute and keen interest in Montessori. The second site was GROW with Reaching Stars Educare Centre (in Khayelitsha, Site C) as a space for learning and exploration. This site is one of the centres I had to observe for the work I was doing for the social franchise the school is part of. Focusing on one case study either the dominant or emerging alternative seemed incomplete. Creating a focus on the Lynedoch Children’s House the one of its kind in South Africa working with poor children would deny the experience of the majority of South African children. Choosing to focus on the Khayelitsha case study would deny an example of what is possible in South Africa. I have selected to use both examples not as comparative case studies but as attempt to express the experience of young children in two specific contexts.

Data was collected using the following methods: participant observation and unstructured interviews.

2.2.3 Participant observation

Borjesson (2014) describes a participant observation as “the most scientific method” because it is the only one that gets close to people and allows researchers to observe what people do while other empirical methods are limited to reporting what people say about what they do”. The researcher is in the position to collect data on what is said and not, picking up on the energies and connections that exist in the space being observed. De Vos, Strydom, Fouche & Delport (2005) write “the degree of involvement of a participant observer, from a complete participant and complete observer is thus one of the crucial factors to be considered when doing participant observation, but does not influence the dynamics of the community”. My role as an observer included sitting and watching while children go about doing their daily activities and routines. As well as having dialogues with the teachers throughout the course of their day and questions on things that I needed clarified. Observing and analysing social processes is hard work, requiring both substantial amounts of time and methodological skill. A participant observer should be skilled in knowing when to do less or more, give help, and when to stop and let the participants carry on with their daily tasks. Human interactions, learning and growth are difficult to quantify and journaling is one of the tools necessary for capturing daily interactions with the participants. I kept a journal during the whole process of research, to help keep track of my time, dates, schools daily programme, interviews and to highlight themes that were consistent in both sites.

The researcher spends a substantial amount of time in the environment under study seeking to have a first-hand experience and a better understanding of the everyday interactions and decision-making processes. Observation methods have the potential to reach beyond other methods to solely depend on self- report (Morgan, Pullon, Macdonald, McKinlay & Gray, 2016). This method of data collection not only answers how, but also when and why questions based on real life experiences as they take place. According to Morgan et al (2016) observation provides insight into interactions between people and illustrates a picture, the context or processes and informs about the influence of the physical environment. As any research method participant observation is also flawed in some ways, Borjesson (2014) questions the role of a participant observer as an ethnographic approach for the potential flaw of keeping too much distance from the participant. Kumar (2014:174) adds that participant observation may suffer from a number of challenges such as when the participants are aware they are being observed they could change their behaviour, observer bias,

different interpretations from observers looking at the same case, and being overly involved in recording and not paying attention to interactions. As a researcher it is important to be aware of such pitfalls and take necessary precautions. The temptation to interact with children was great though in violation of ethics, I avoided the pitfalls by making sure I visited the school when the principal is present and reiterate my role as an observer. According to Morgan, Pullon, Macdonald, McKinlay & Gray (2016) the role of the researcher moves along a continuum of observer to participant, the researcher can either be passive or interact with the participants depending on the need.

2.2.4 Unstructured interviews

Kumar (2014:176) defines an interview as “person to person interaction, either face to face or otherwise and also between two or more people with a specific purpose in mind”. Interviews with individuals and group discussions were used with flexibility and sensitivity. The participants interviewed are mostly part of the day to day running of the centres with one or two that form part of the organisations connected to both case studies. Structured interviews were employed, these interviews were mostly done during sleep or nap time at the school, do so as a reflection to the days or weeks work.

My role was to facilitate conversations or dialogue around a particular topic that helps cover a number of questions I had. Morse and Richards (2002:93) explain that unstructured interviews offer participants an opportunity to tell their story with minimal interruption by the researcher, and appropriately used in studies where the researcher seeks to learn primarily from respondents what matters or how procedures are understood. There is much more freedom in how the participants interact with the researcher. The role of the researcher is then to ignite conversations and allow the participants to speak freely. Kumar (2014:177) argues that unstructured interviews are extremely useful in exploring intensively and digging deeper into a situation, or issue as they provide a varied range of in-depth information and best suited in identifying diversity and variety. Unstructured interviews resemble conversations which is the natural part of everyone’s daily routine. Despite the lack of structure in this form of interview the researcher must have some level of preparation or questions prepared beforehand even though they will not be used to dictate the conversation. See appendix A for a list of interviews.

2.2.5 Focus group interviews

Another method of data collection is focus group interviews that were conducted with parents and teachers. The focus group interviews were very informal in nature, I had an opportunity to gather two or more teachers to discuss an issues that are connected to their everyday school life. The interviews were conducted with two or more teachers between March and July 2017. Most of the interviews were conducted without prior arrangement this was intentionally done in order to get as honest information as possible. I would start off the conversation based on the predetermined set of questions or current affairs. Morse and Richards (2002:95) state that group interviews are a form of unguided conversations in either formal meetings, social gatherings or multiple respondent interviews. These interviews are run for the purpose of gaining insights on key issues around the subject area, the nature of the interview uses open-ended questions in order to allow for freedom and to delve deeper. However, if not careful they tend to get out of control if heated emotions arise. Another learning opportunity arose when I facilitated a session in an ECD conference for teachers and parents who are part of the GROW with Educare Schools the organisation I work for. I was able to explore perceptions and understandings on different issues pertaining to ECD. Kumar (2014:193) states in a focus group interview the researcher explores the perceptions, experiences and understandings of the people who have common experiences about a particular issue. The researcher using this method generally begins with a defined questioning plan but uses a more conversational style of interview. In a focus group, areas of discussion prepared beforehand only provide a frame for discussion, and members of the group are encouraged to voice their opinion regarding the issue discussed (Kumar, 2014:194). Recording of the interview in whichever form works for the research is imperative, I took notes for interviews and a journal for ongoing observation.

2.2.6 Data analysis

In research analyses whether positivist or naturalistic tradition, the purpose is to organise and elicit meaning from data collected and draw realistic conclusions. The process reduces the volume of text collected, identifies and groups categories together and seeks some understanding (Bengtsson, 2016). The researcher constantly asks the questions, how, what and why, looking at all the factors that

influence a particular outcome. Data analysis is critical as in findings one has to show relevance of the data to the existing body of literature (Henning, 2004:27). There are different ways in which qualitative data can be analysed and how you write them up depends entirely on the researcher. According to Kumar (2014:317) data can be analysed by identifying the main themes that emerge from the field notes, the interviews and writing about them. The data collected in this paper was analysed using qualitative content analysis (QCA). Schreier (2014) explains QCA as a method that systematically describes the meaning of qualitative data. They are a set of techniques used to analyse textual data and elucidate them (Motjaba, Jones, Turunen & Snelgrove, 2016). The data is analysed by teasing and creating themes from text. According to Mayring (2014) content analysis has a relatively short history despite its long past, as the method was used for centuries without receiving the recognition due. There are key features that differentiate the method, which will be evident in the manner that the data will be presented.

Theme	An implicit topic that organises a group of repeating ideas (Mojtaba et al, 2016).
Thread	Considered a thread of underlying meaning implicitly discovered at the interpretative level and elements of subjective understandings of participants Mojtaba et al (2016).
Flexible	According to White and Marsh (2006) “content analysis is a flexible research method that can be applied to many problems in information studies, either as a method by itself or in conjunction with other methods”.
Systematic	Content analysis is a systematic, rigorous approach to analysing documents obtained or generated in the course of research (White and Marsh, 2006).

Table 2.1 – Key Features on how data will be presented (White & Marsh, 2006 and Motjaba, Jones, Turunen & Snelgrove, 2016).

2.3 Summary of the case study protocol

STAGES	DESCRIPTION
Topic	Education for Sustainable Futures: An Appropriate Approach for Early Childhood Development from Birth to Five Years.
Purpose and Rationale for Case Study	This study explores a method or system of learning that integrates early childhood and sustainable development. While it seems clear to me that it is logical to link the two, the key motivation is to attempt to provide a study that demonstrates that this connection of theory and practice may indeed be possible.
Research Question and Objectives	<p>Research Questions:</p> <p>I aim to explore:</p> <ol style="list-style-type: none"> 1. What it is that makes a quality learning environment? 2. The role of the physical (indoor and outdoor) environment in children's development. 3. Whether the Montessori method makes sustainable development explicit in early childhood development 4. The impact of a learning environment that embodies the Montessori principles. <p>Research Objectives:</p> <ol style="list-style-type: none"> 1. To participate in creating an active learning environment. 2. Observe two case studies for explorative purposes. 3. Participate in infrastructural upgrade and resource provision at GROW with Reaching Stars Educare Centre (one of the case studies for this paper). 4. To explore the implication of Sustainable Development goals in ECD as spearheaded by the United Nations and launched in September 2015.
Literature Review	Literature review on links between SD, ESD and EfS with a detailed look at ECD, nature deficit disorder and Montessori education as one of the pedagogies that has entrenched principles of SD.
Unit of Analysis	Education for Sustainable Development or Education for Sustainability

Geographic Limits / Area	South Africa / Cape Town
Data Collection Methods	Qualitative ethnographic research method (participant observation) <input type="checkbox"/> Literature review (reports, publications) <input type="checkbox"/> Observations (journals and notes) <input type="checkbox"/> Interviews and focus groups
Results and Findings	Transcribe notes, personal observations, and interviews.
Data Analysis	Analysis of finding using qualitative content analysis by mapping key themes and a thread that runs through the results.
Write Up the Study	Preparation of the report or presentation of the results

Table 2.2 – Summary of the Case Study Protocol

2.4 Conclusion

This chapter briefly covers the research method for the study, an ethnographic participant observation method. The method is designed to aid the researcher to gain a deeper understanding of the ECD case studies observed. Participant observation was reviewed, with a look at both the disadvantages and advantages of using the method. The advantage of using two case studies was highlighted. Additionally, the importance of literature review was emphasized as a basis for research undertaking. This paper also used focus groups and structured and unstructured interviews for data collection. The data collected was analysed by looking at emerging themes that arise from both case studies and how they are connected to the body of literature reviewed. The following chapter takes a closer look into the literature related to ECD, ESD, nature deficit disorder and Montessori pedagogy, using it as a roadmap to guide the research and attempt to answer the questions laid out in chapter one.

CHAPTER 3 LITERATURE REVIEW

3.1 Introduction

The preceding chapter briefly covered the research methodology used for this paper, highlighting the importance of literature review as it lays the ground work for the rest of the study. A qualitative participatory research method was discussed, with key emphasis on its strengths and weaknesses. Structured, unstructured, and focus group interviews were also touched on as methods of data collection used. In conclusion concept mapping was chosen as a method of data analysis that will add value to the research and tease out themes in the research. The main aim of this chapter is to explore literature on sustainable development and how it relates to, or could be embedded in learning in early years. The literature reviewed will assist in providing an argument that supports the objective of the study.

To explore the system of learning that integrates early learning with SD. In order to provide a succinct discussion on the topic of Education for Sustainable Development (ESD) in line with the research question to be explored the following five areas will be outlined.

1. **Sustainable Development:** The key elements of sustainable development will be analysed. These will include environmental, social and economic aspects of sustainable development.
2. **Decade of Education for Sustainable Development:** The interrelatedness between these key elements and Education for Sustainable Development (ESD) will be shown with reference to early childhood development. And also a detailed look at the SDG's and how they impact early childhood education that embodies SD.
3. **ECD Defined and ECD in South Africa:** Context and a brief on the value of collaborative effort in the ECD space. ECD has a significant role in taking up the challenge of sustainability in ways that reflect the fundamental principles of sustainable development (Dyment et al, 2014).
4. **Nature Deficit Disorder:** Louv (2008) explains that this disorder is not a medical term but human cost of alienation from nature and if children have no connection with the environment they cannot be good stewards for it in the future.

5. Montessori Education Method: Examining three areas of interest- the environment, independence and the state of becoming.

In conclusion, the argument is that despite the contention around the definition of SD and its applicability, there is consensus in the value of introducing the principles of SD or ways of development that do not compromise the future generations needs in the early years.

3.2 Sustainable development

As previously stated in chapter 1, the most cited definition from the Brundtland report is that “Sustainable development is the development that meets the needs of the present without compromising the ability of the future generations to meet their own” (Venkataraman, 2009). This definition is particularly useful as a starting point because it emphasises the key concept of “*development*” as it relates to the meeting of “*needs of the present*” in a manner that does not compromise the “*ability of future generations*” to meet their own needs. According to Bolis, Morioka and Sznclwar (2017) sustainable development is concerned with finding ways where human socioeconomic needs are met in harmony with environmental issues. Palmer & Flanagan (2016) believe “sustainability is not just good to do but imperative to do even though once seen as window dressing, goals and strategies about sustainability are positioning organisations for long term success”. The principles of sustainable development set a trajectory, and if taken up with profound care, will help humans re-imagine a future that is not detrimental to the earth’s living organisms needs. According to Holden, Linnerud & Banister (2016) sustainable development is essentially a strong ethical or moral pronouncement as to what should be done.

The concept of Sustainable Development has been criticised as being ambiguous in its definition. Hopwood et al (2010) argue that the ambiguity of the concept of sustainable development allows business and government to be in favour of sustainability without any fundamental challenge to their present course. Thus, they continue to pay lip service to the term without implementing actionable policies or plans. The underlying rationality on issues of sustainability reflects a belief that business cannot survive in a society that fails (Palmer & Flanagan, 2016). SD provides a starting point that helps to guide our ideas about what is sustainable in the future, not based on today’s ideas about what is possible and appropriate (Conway, 2012). Everyone wants a better future for the next generations as long as they do

not have to pay a price for the former generations wrong. Webster (2013) found out that people want to see things change as long as it will not cost them.

Despite criticism on sustainable development, some scholars have attempted to clarify the definition through three pillars: **social, environmental and economic**. There seems to be extreme views as to what SD tries to achieve, some view the concept as being largely anthropocentric (human centred) and others as environmentally centred.

SUSTAINABLE DEVELOPMENT MODEL

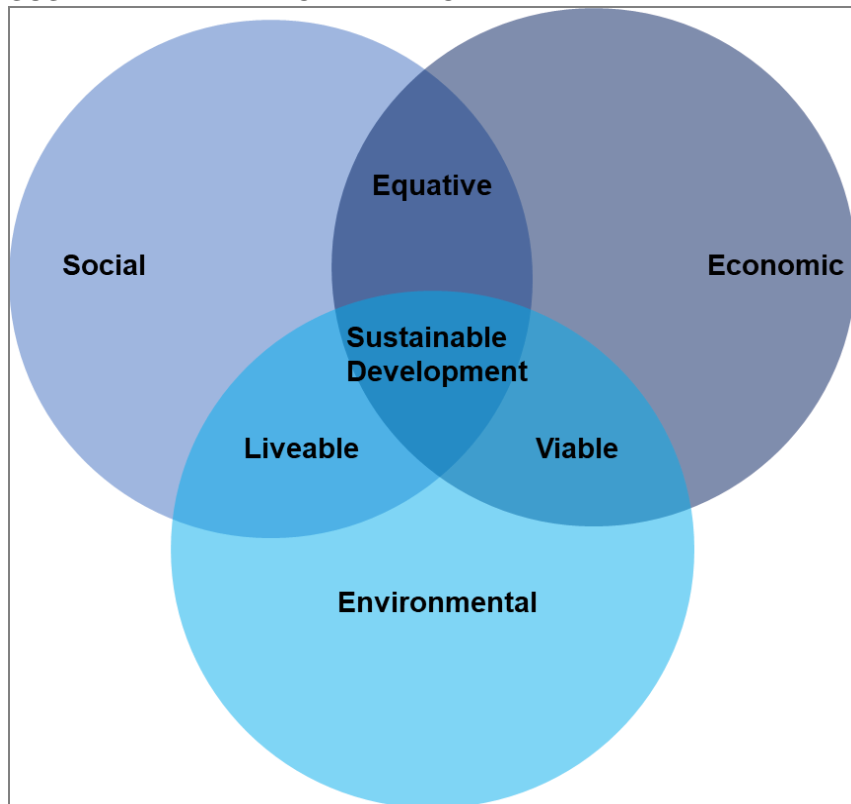


Figure 3.1 - Provides a visual representation of the model of sustainable development (Castellano, Ribera & Ciurana, 2016).

3.2.1 Environmental

At the heart of the environmental debate lies the impact of the damage that humans have caused to the environment with its overwhelming consequences such as natural resource depletion and drastic weather changes (Filho, 2011). MacLaren (2003) reports that humans are wasting resources faster than ecological systems of the planet can tolerate. The response to this widespread behaviour has been minimal

with no real penalty to those affecting the environment. The number of bodies or organizations that are tasked with looking after the environment fall short of doing so in the face of “business as usual”, where big corporations still get away with environmental degradation. Webster (2013) argues that the notion of SD is based on customer guilt, and marred with slow processes of change that does not threaten those in power which in turn keeps people locked in systems that continue to damage the planet. Webster (2013) writes “we do not need to attend another tree planting ceremony; we need to become experts at ecosystem management and gardening the planet”

Furthermore, Saunders (2014) writes about planetary boundaries (PB), and states the core of PB is that humankind is transgressing global environment tipping points resulting in changed weather conditions and the like that threatens to unravel human progress. The manner in which humans continue to deplete the earth’s resources carries a promise that Saunders (2014) refers to as “*promise of calamity*” if society continues to pursue a business as usual approach. The planet’s ability to provide an accommodating environment for humanity is clearly challenged by our own activities towards an unknown future state (Costanza, 2014). The response to these challenges lies in changed and reformed behaviours at a macro and micro level. Educators have an opportunity to spearhead thinking and teaching that incorporates sustainable development principles. This can be done in all levels of education with particular emphasis on early childhood development.

3.2.2 Economic

According to Yilzid and Funda (2011:2), “Sustainable economic development is directly concerned with increasing the standard of living of the poor, which can be measured in terms of increased food, real income, education, health care, water supply and sanitation and only indirectly concerned with economic growth at the aggregate.” This definition necessitates development that embodies the principles of sustainable development, and equitable resources use that do not infringe on the environment and populations. However, Swilling and Anneck (2011) establish that the mainstream capitalist’s system has implications for billions of people who will suffer the consequences of “business as usual” maximisation of profit at the cost of the ecosystems, particularly the poor. Holden et al (2016) argue that possible economic growth is not one of the primary dimensions of sustainable development.

Economic growth can contribute to technological changes and income growth, but can also contribute to a less sustainable growth like it has done in the past. Economic growth is both inherently sustainable nor unsustainable the solution lies on the policies, laws and regulations and institutions in place (Holden et al, 2016).

One of the SDG's is to "promote inclusive and sustainable economic growth, full and productive employment and decent work for all". With over population, income inequality and exploitation of resources, it is hard to imagine how the goal will be met. Constanza (2014) argues that in a new world context we have to think differently about what the economy is and what it is for if we are to create sustainable prosperity. A fundamental change is required in the way in which we define economic prosperity and well-being. Holden et al (2016) writes that SD should be presented as a set of constraints to which economic activities and all other human activities must adhere. Businesses should operate within properly defined guidelines of what SD entails and seeks to achieve. Constanza (2014) adds that material consumption and Gross Domestic Product (GDP) are merely a means to an end, not ends in themselves.

3.2.3 Social

Holden et al (2016) argue that social equity including democratic participation is a key theme in SD. Sustainable human existence needs to consider social economic dimensions along with engagements with the natural environment (Department of Environmental Affairs, 2012). Blewitt (2008) challenges that "we need to discover what it means to be native to a place and refresh our relationship with non-human environment, nurturing ecological identity and literacy and feeding the world in which we depend on". Humans have an inborn desire to connect with nature. The social aspects of sustainable development are in itself embroiled in different values and cultures that influence the way people interact with the environment. Webster (2013) argues that some solutions to the problems we face today can only be achieved through long political debates. Holden et al (2016) concur by arguing that political liberty is important in terms of social equality and SD, and that participation is a particular feature of this liberty.

The common thread in the debate about sustainable development is the role of humans in the harm of the environment. This means the onus is on us to modify our

behaviour and change our course of action. There are movements towards realising sustainable living as an answer to present problems. Sterling (2008) points out that UNESCO argues that just as we have learnt to live *unsustainably* we now need to learn how to live *sustainably*. Although Hopwood et al (2005) believe the concept of sustainable development to be human-centred, Harris et al (2001) point out that one of the major important aspects of human development is its treatment of environmental issues. In order to avoid the calamity that Saunders writes about it is imperative to engage in all spheres of life and new ways of being. Constanza (2014) maintains if we seek to improve human well-being and social equity while sparing the environment we will need a new vision of the economy and its relationship to the rest of the world.

3.3 Decade of Education for Sustainable Development

In 2002 the United Nations adopted the Decade of Education for Sustainable Development (DESD) goals that were observed from 2005-2014. Accordingly, the leaders of the world convened at the United Nations Headquarters in 2015 to celebrate its seventieth anniversary and also set in motion the SD goals for 2030.” (UNSDSN, 2015). The 2030 Agenda for Sustainable Development has 17 core goals and 169 targets, however for the purposes of this study I will focus on goal 4 and the targets pertaining to SD and early learning (UNSDSN, 2015).

The Sustainable Development goal 4 is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.	
Target 4.2	By 2030 ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary school.
Target 4.5	By 2030 eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous people and children in vulnerable situations.

Target 4.7	By 2030 to ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of cultures contribution to sustainable development.
Target 4a	By 2030 build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.
Target 4c	By 2030 substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states.

Table 3.1: Sustainable Development goal 4 linkages to education (Transforming our world. The 2030 Agenda for Sustainable Development, 2015).

The SDG's have been praised and also criticised by different scholars for a number of reasons. Those in support view the goals as "praiseworthy in several aspects especially for its explicit basis on strong principles such as equality, dignity and respect for nature" (Asah, 2015:2). The new agenda has been well received, Woodhead (2016) believes the SDG's signal that ECD will be a priority focus for the 21st century and strengthening early childhood has an effect in other SDG's as research shows the positive outcomes of investment in ECD in adults health and productivity. The SDG's are novel and its novelty calls for a development strategic framework that is broader more nuanced and context specific (Asah, 2015). Additionally, Le Blanc (2015) found that the novelty of the new SDG's is that "they aim to covert the whole sustainable development universe which includes basically all areas of the human enterprise on earth". However, the SDG's have been criticised in that by attempting to cover all that is good and desirable in society they have ended up being weak, vague and meaningless, as they do not distinguish between primary and secondary goals (Holden et al, 2016). The thinking is that may be the

goals should be aligned to people's primary needs and reflected explicitly. Moreover, the reality of environmental limits and its potential drawbacks of increasing economic growth have not been firmly placed on the SD agenda. An attempt to drive environmental issues where education is concerned is set in target 4.7 that aims to promote SD through education for sustainable development (ESD).

According to Venkataraman (2009) ESD encompasses environmental education but sets it in the broader context of socio-cultural factors and the socio-political issues of equity, poverty, democracy and quality of life. Similarly, at the World Conference on ESD, the concept was defined as "an approach to teaching and learning based on ideals and principles that underline sustainability underlying the key themes expressed in the latter definition" (Kopnina & Frans, 2012). The concept constitutes a comprehensive approach to quality education and learning. The model of ESD recognises the need to include different facets of learning, and that learning cannot be compartmentalised and confined in institutions of education (Butcher & Renton, 2010). Furthermore, there is recognition that sustainable development is relevant to the lives of children and young people, and they have a role in dealing with problems facing the world today and in the future (Butcher & Renton, 2010). Cars and West (2015) add that ESD is an essential part of ethical and moral education as it implies personal ethical choices and the embodiment of the individual and social good.

Webster (2013) points out some shortfalls in ESD. He argues that there is no sense in sustainability which is framed around customer guilt about their spending for example. Education for sustainable development should be such that people have intrinsic desire that sees the importance of preserving the planet, not from guilt. There are major flaws in an education system that is for something, as it sets itself up for failure should it fail to achieve that which it has set out to do. Additionally, ESD has been criticised for its ambiguity, the concept is not unified and not easily defined. Bonal & Fontdevila (2017) present a critical view of ESD, directing to the top down approach and neglect of structural causes. The over emphasis on individual agency disregard power relations, discrimination and lack of voice that is prevalent in most communities (Webster, 2013). The top down approach concerns leadership exerted by global institutions, and the concept assumes that this universal idea could be adopted with ease in local contexts.

Additionally, Hellerg & Knutson (2016) argue that a number of scholars have issued warnings that ESD is running serious risk of being co-opted by the global neoliberal

agenda that seeks to impose an economist one size fits all reference to the world. However, at the heart of ESD approach to the education for young children is its acknowledgement of the distinct social, cultural and physical environments in which children are raised and to which they belong (Pearson & Degortadi, 2009). The environments in which children grow and experience life have a long-term effect on how they relate to the world around them. If ESD is to be meaningful it has to be rooted in the local concrete reality of young children. Today's children are decision makers of tomorrow, and those decisions will be based on learning, experiences and values gained during their childhoods (Butcher and Renton, 2010). Teachers, parents and communities have the responsibility of instilling good values in children so that they learn from history and find new ways of interacting with nature and re-defining development.

By instilling young children with important life and learning skills, early childhood education has the potential to promote change and enhance the lives of communities on a global scale (Emma and Pearson, 2009). It is important to engage young children in environmental learning as a key element in cultivating a lifelong disposition of care for the environment (Lethoko, 2014). The objectives of ESD are focussed on integrating sustainable development in areas of learning from early year to university, develop competencies that empower individuals to reflect on their own actions and to provide holistic and transformative education. There are challenges associated with ESD and its objectives. One being that the objectives are relevant in some western developed societies where the idea of a triple bottom line seems to be relatively undisputed. Second is that ESD objectives are not always clear and some cases contested and criticized (Kopnina & Meijers, 2012). Gadotti (2016) prefers writing about education for sustainability instead of ESD, because to educate for SD seems to be limited and a way to limit education.

3.4 Education for Sustainability (EfS)

"A SUSTAINABLE FUTURE DOES NOT EXIST, IT NEEDS TO BE IMAGINED INTO EXISTENCE"

(Conway, 2012)

There is a call to re-imagine a society that does not depend on fossil fuel for energy, but one that encourages a culture of sustainable living. EfS is important to ward off potential environmental catastrophe. Children need to be equipped and be part of the solution, the future belongs to them. Sutton (2009) asks "what is the appropriate role

of education in making the transition to a sustainable society. The role of EfS is to configure what sustainable futures should look like based on the local and relevant context, as a holistic approach to education. Our society faces a challenge in transitioning toward sustainable lifestyles and practices, and education is vital in making this transition (Venkataraman, 2009). The lifestyle changes will be achieved in the process of transformation that requires a deeper level of learning involving critical thinking, self-reflection, dialogue and consciousness (Cars & West, 2015).

Santone, Saunders and Seguin (2014:2 define “education for sustainability as a paradigm of education that puts citizenship and the creation of resilient, secure and prosperous communities at the centre of teaching practice”. Bell (2016) argues that unless the 21st century education is looked at through the lens of sustainability some of its important elements will be missed. Sustainability has opened up the space by expanding beyond purely environmental concerns and with it a different perspective has emerged on what represents sustainability or aspects of it (Fischer & McAdams, 2015). Fischer and McAdams (2015) believe there is another way of thinking about sustainability beyond the environmental realm. The role and importance of systems thinking is central to sustainability. There are intricate elements of ensuring a sustainable future that need to be taken into account as per the sustainability debate. Santone et al (2014) add that educating for sustainability involves teaching and learning collective problem-solving skills to address critical environmental, economic and social issues. In an attempt to provide a clear understanding of what education for sustainability (EfS) entails, the following four features/elements are explored.

3.5 Key features/elements of Education for Sustainability (Efs)

EfS PEDAGOGIES ARE OFTEN PLACE OR ISSUE BASED	According to Gadotti (2016) there are different applications of the concept depending on the context, the risk of vulnerability is global however the solutions are local and regional. The thinking around SD is very much context based, and issues that affect the country and a region. Therefore, the control measures in terms of environmental protections should be both globally and locally relevant.
---	---

AWARENESS EDUCATION	Kopnina (2012) argues that EfS is not just about raising awareness of the environmental problems but an integral part of more complex and integrated relationships with specific focus on human development and global economic growth. When people do not have real awareness of their role in environmental degradation not much can be done. The article on Second Nature by Barnhill (2010) challenges for a shift in how we make ALL people understand their ecological footprint stating that “ <i>we must make the invisible visible</i> ”.
ESD IS CROSS-DISCIPLINARY	Fischer & McAdams (2015) argue that some scholars have argued for a deeper more robust approach to EfS and contextualising approaches through place, self and community. Additionally, systems level analysis and synthesis to create a more effective and integrated approach that requires students understanding aspects of sustainability. In order to appreciate the intricacies of an education system, it is imperative to design education curricular that readily takes into account its complexities. Learning would embrace interdisciplinary systems thinking to address environmentally sustainable action on local, regional and global scales (Barnhill, 2010).
ETHICAL AND MORAL EDUCATION	ESD implies to change the system, implies life respect, care for the planet and community of life. This entails sharing fundamental values, ethical principles and knowledge (Fischer and McAdams, 2015). There is a need for education that speaks to ethical and moral implication of the decisions humans make daily in terms of care for environment, or lack thereof. An article on Second Nature (2017) reports that we need a context of learning that would change the human/environment interdependence values to make ethics a centre part of teaching in all the disciplines, rather than in isolation.

Table 3.2 – Key Features / Elements of Education for Sustainability (Efs).

3.6 Systems thinking

Given the different elements that contribute to the sustainability debate it is critical to incorporate systems thinking to work across different domains that pertain to sustainable development. On their paper on holistic education, Mahmoudi, Jafari, Nasrabadi and Liaghatdar (2012) provide that education is not a human enterprise but rather an ongoing process of the universe itself. As the world evolves so should our approach in terms of how we educate. Rosas (2015) defines systems thinking as a broad paradigm concerned with interrelationships, perspectives and boundaries. The concept of EfS is multifaceted in nature and therefore should be dealt with as such. According to Bosch, Nguyen & Ha (2014) there is an increasing demand for society to move away from linear thinking that often leads to quick fixes, but to a new way of thinking that is systems based. As we transition into a world that drives for sustainable futures, a mode of thinking that incorporates the different facets is necessary. This is to ensure that the sustainability discussion does not end in policies and university papers, but rather transferred into tangible goals that impact our way of life.

Earlier on in the chapter Hellerg & Knutson (2016) explain ESD is seen as having a neoliberal agenda that uses a one size fits all way of thinking, however McPhearson, Lwaniec & Bai (2016) argue that systems thinking used as holistic perspectives can span multiple scales and sectors.



Figure 3.2 - On Rights and Realities: Building a System of Services for Young Children (Kagan, 2017).

Kagan (2017) gave a visual representation of what systems could facilitate a move towards a development to meet the SD goals. Clark (2014) asked, what happens if we promote systems thinking in early years. Systems thinking involve weaving together our social, emotional and intellectual capacities that begin to emerge during preschool years. As such it is our responsibility to capitalize on the critical time in executive function development. It is through mindful and purposeful attention to children's thinking that we can truly understand how capable they are of learning deeply. Gharajedaghi (2012) found that the reason we see the world as complex and chaotic, is because we use inadequate concepts to explain it. "An effective systems methodology would deal not only with the imperatives of interdependency and the complexities of dynamic systems, but also the question of purposeful behaviour of multi minded systems" (Gharajedaghi, 2012).

A systems thinking approach is useful in addressing or answering questions on sustainability. It has been identified that a systems thinking approach is useful at both policy and application level. There is a push towards holistic education. Therefore, an education system should be designed based on local context which takes into account different areas that contribute to the child's development. As the image above depicts, there is need for all gears to work together and so should be thinking that informs plans and policies to drive the SD 2030 goals. Clark (2014) and many more scholars advocate for an introduction of systems thinking at an early age. She states that intentional teaching practices focused on higher level thinking skills have the capacity to grow children's learning.

3.7 Early Childhood Development

The preceding section examined the value of system thinking in looking for alternative solutions in early learning. This section focused on both how we solve problems and children's ability to grapple with the complex way of thinking from an early age. This segment of this paper provides a brief introduction of early childhood development (ECD) with a keen emphasis on ECD in South Africa and its challenges.

ECD period presents an opportunity to instill values and principles that will ensure that the future generations learn from the previous generation's mistakes. Samuelson and Kaga (2008) state "education is humanity's best hope and most effective means in the quest to achieve sustainable development, and as such ECD plays a key role in achieving sustainable development (Blatchford, 2005). The National Department of Education of South Africa defines ECD "as the process by which children from birth to nine years of age grow and thrive physically, mentally, emotionally, morally and socially" (Atmore, 2012). In her book *Young Children and the Environment*, Davis (2009) writes that early years are the period of greatest and most significant development for a person, and are a foundation for his/her entire life. However, these years have received little investment despite the large body of research highlighting its potential. Richter (2016). ECD encompasses a number of distinct stages with particular needs (World Bank, 2010):

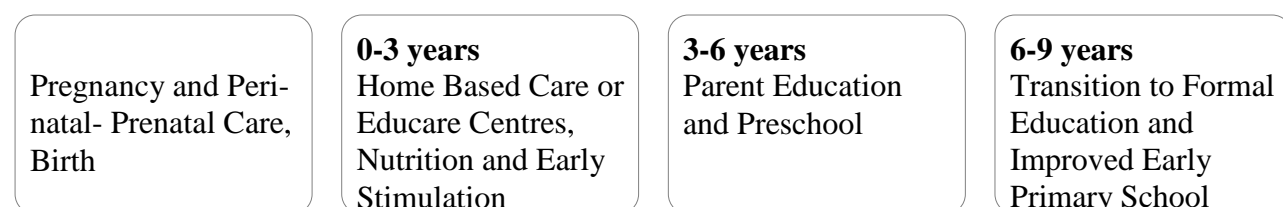


Figure 3.3 - Stages of early childhood development.

Additionally, the first SD goal is to ensure that all human beings can fulfil their potential in dignity and equality. Protecting, promoting and supporting early childhood development is essential to enable everyone to reach their full human potential. Today's children will drive economic growth and development in the societies of tomorrow. Failing to make the investment in children's early learning will have profound implications in the future. Richter (2016) warns that we should be concerned about an estimated 250 million children younger than 6 years in low and middle-income countries who are at risk of falling short of reaching their full potential because of the lack of investment and access to quality care in their formative years. The deficits and disadvantages that persist into the subsequent generation produce a vicious intergeneration cycle of lost human capital and perpetuation of poverty (Lo, Das & Horton, 2016).

3.8 ECD in South Africa

In the second decade of democracy ECD is characterised by the challenge of providing relevant programmes for poor and vulnerable children (Ebrahim et al, 2011). The legacy of apartheid still holds a tenacious grip on a country that has both developed and underdeveloped aspects, with two separate and very unequal economies (Casper & Lamb-Parker, 2012). For the purposes of this review, it is crucial to note the assertion made by scholars such as Swingler (2013:2), stating that “South Africa has invested some 1.2 billion Rand in comprehensive national strategy to provide a well-resourced and managed ECD system in addition to support for youth headed households and other empowerment initiatives.” More than money, education in South Africa requires collaboration between government, organisations and communities. Due to the nature of the ECD sector in South Africa, support by different structures is necessary in making sure that we do not infringe on the children’s rights to learn in a safe and healthy environment. The most highlighted challenges facing ECD include poverty, living conditions, teacher education, training, health and HIV/AIDS (Atmore, 2012). I will provide an overview of these challenges and their implications for ECD in South Africa.

3.8.1 Poverty

Atmore (2012) reported that there are 6.5 million children in South Africa and 3.8 million of them live in dire poverty. This means, that more than half SA children live in environments that are not conducive to their learning and development. The reality is that some children attend schools/early-learning centres in an environment that hinders their learning, one could view these spaces as places of safety with minimal learning. The country’s vision according to NELDS (2013) is for “ECD to protect children rights by providing resources and environments for the development of the child’s full potential.” The constitution of South Africa (1996), states that “everyone has a right to an environment that is not harmful to their health or well-being, and to have the environment protected for the benefit of the present and future generations through reasonable legislative and other measure”. Therefore, each child should be afforded an opportunity to grow in an environment that is not of detriment to his/her development. The World Health Organisation calls for improvements in the circumstances in which people are born, grow, and live (Olusanyo, 2011).

Commonly, poor households use their homes as centres for income generation, the businesses range from hair salons, to shops and crèches/early learning centres (Elliot, 2006). More than 80% of the income that these centres make is through school fees, from parents who often cannot afford to pay for the services. The poverty in most black communities in South Africa creates complex series of interactions of vulnerabilities that causes very real and specific effects on child nutrition, cognitive, physical and mental health as well as that of their families, including most notably maternal depression (Elliot, 2006). Casper and Parker (2012) women entrepreneurs, are opening up early care centres and adding to already existing preschools to provide an income for them while contributing to the growing need of ECD centres. Policy experts agree that it is time to mobilize from all corners of ECD for creative and cross sectorial programmes for children in the earliest years and their families.

3.8.2 Living conditions

Preschool settings as spaces for the care and education of children are created and used with a purpose or with intent, which may be clearly articulated in the form of policy or legislation (Prochner, Cleghorn, & Green, 2008). The latter may not ring true for the preschool settings in the informal settlements/townships, as most schools fall short of what is expected for a well-functioning ECD centre. Elliot (2006) the majority of the urban population in the developing world cities is housed in informal settlements (variously termed barrios, favelas, bastes etc.) and in slums or tenements (legal developments which become decayed and degraded through overcrowding and poor upkeep). These living conditions give birth to different challenges facing the ECD such as health and safety. In poor neighbourhoods of cities in the developing world, many most threatening environmental problems are found close to home (Elliot, 2006).

Evans (2006) and Atmore (2012), amongst others, cover literature on the impact of *physical environment* on children's development. They argue that physical environment factors such as inadequate housing and lack of basic services have an impact on children's development. In an attempt to explain the influence of environment on children in poor communities, this paper will focus on what Kaap (1991) refers to as "environmental deprivation" as an environment that is characterised by inadequate housing and overcrowding. This is common in the

slums of densely populated industrial areas where the environmentally deprived child is often found. Based on the statistics by Letseka (2010), about forty percent of South African children are environmentally deprived.

The challenge with ECD that operates in informal settlements is the inherent lack of resources in these areas and an issue of convenience and proximity (crèches have to be close to home). Atmore (2012) reports “that infrastructure in ECD is a particular problem in the South African context, often framed as the biggest challenge in ECD provisioning in the country.” Pitt et al (2012) report that schools in poor areas range from well-resourced, to very poorly resourced unregistered crèches where teachers rely on school fees alone to fund their facility. A report by the World Bank notes that in the absence of funds from the government the major source of funding for early childhood services in African communities is from the fees paid by the parents (Goduka, 1997). It is estimated that parents pay about 80% of the ongoing operational expenses of community based Educare services (Goduka, 1997). The social and economic dynamics of the African family is characterized by inequality and injustice in the distribution of resources and services and the system of apartheid (Goduka, 1997)). This system is such that it has left young people living in inadequate housing, with poor nutrition and they are sometimes left without adult supervision while both parents look for work in urban areas. According to Atmore (2012), the government has indicated the need to increase *accessibility* and *quality* of ECD programmes. On the other hand, Pitt et al (2012) report that while government is concerned about quality, children in poor communities are less likely to succeed owing to a number of factors such as lacking infrastructure, parental absence and high rates of development delay, whereby children start grade R without prior learning in an educare or home schooling.

3.8.3 Teacher education and training

In august 2017 there was a community of practice meeting held by BRIDGE network an organisation that provides networking opportunities to organisations in the ECD space in South Africa, a question was asked, what makes for a quality learning program? Teacher training was perceived as one of the key components that will transform ECD in South Africa. However, it was acknowledged that qualifications alone will not make a difference but variations of support structures and deeper engagements from different departments and facilities. According to Wolhuter (2006),

any education stands and falls by the quality of its teaching profession, and thereby the quality of its training programmes. Mtshengu (2017), a school principal at GROW with Reaching Stars believes that over the years teaching has become something that people do for income with little investment in making an impact on the students. Mukeredzi (2013) identifies that teacher's perceptions of what they learn and how they professionally develop through their teaching roles are key to classroom practice and learner achievement. They influence teachers approach, choice of materials, content and learner activities. Dirks (2013:1) reported that "the South African education system was ranked 133rd out of 142 countries by the World Economic Forum", and one of the main challenges is that the teachers do not have basic pedagogic and content knowledge competencies needed to impart the skills needed by learners.

3.8.4 Health

Health is also huge concern for ECD in South Africa, particularly for children in poor urban communities. Pollution, communicable diseases, learning disabilities and HIV/AIDS are some of the everyday problems that educators face. Children suffer the consequences of problems they did not create. Additionally, young children growing up in poverty are at a greater risk for under development and physical disabilities, yet in South Africa helpful early intervention services such as speech/language or physical therapy are minimally available, especially in urban poor/rural townships (Casper & Lamb-Parker, 2012). The disturbing finding is that "the deficiencies in the development of a child from 0-6 years old can hardly be dealt with in the periods ahead" (Kayili & Ari, 2014). Whether or not this is a skeptical view for poor children who cannot afford an intervention at an early stage, they have to carry the effect throughout their entire lives.

3.9 Nature Deficit Disorder

"IF NATURE EXPERIENCE CONTINUES TO FADE FROM THE CURRENT GENERATION OF YOUNG PEOPLE, AND THE NEXT, AND THE ONES TO FOLLOW, WHERE WILL FUTURE STEWARDS OF THE EARTH COME FROM?"

(Louv, 2008)

Nature Deficit Disorder is one of challenges facing ECD at both a local and global level. The challenge has major effects on how we engage the subject of

environmental care now and in the future. Louv (2008) explains that “nature deficit disorder is not a medical diagnosis but a description of the human cost of alienation from nature”. Humans are born with an innate connection to the natural environment. White (2004) writes that “humans are genetically programmed by evolution with an affinity for the natural outdoors”. While technology is flourishing, it is diminishing children’s access to the physical world in a number of ways. Today children are aware of the global threats to the environment, but their physical contact and intimacy with nature is quickly fading (Louv, 2008). Children prefer technology, and simple indoor activities to outdoor activities. On his paper on children’s disconnect with Nature, Passi (2009) reports that there has been a documented global decline of children spending time in nature and outdoors in urban areas. Issues of safety, working parents, lack of parks, natural surroundings in urban landscapes, the lure of television and computers are some of the reasons children are spending more time indoors (Passi, 2009). On the other hand, Louv (2012) writes that bringing children to nature or bringing nature to them is not a solution nor is the only way parents and teachers can ignite wonder and curiosity in children, research strongly suggests the importance of nature to children’s health and their ability to learn should be the motivating factor. One of the commonly facilitated strategies for facilitating the needed reconnection with nature is environmental education (Fletcher, 2017).

Venkataram (2011) makes a clear distinction between environmental education and education for sustainable development. Environmental education focuses on the human’s relationship with the natural world and on ways to conserve, preserve it and properly steward its resources. While ESD approach to teaching and learning is based on ideals that underlie sustainability (finding a balance between economic and social development and environmental care). We have entered the Anthropocene, “the age of humans”, where humans are having a devastating impact on the natural environment. For the first time in history, more than half of the world populations live in towns and cities and the traditional ways of how human beings have experienced nature are vanishing along with biodiversity (Louv, 2011). The natural world is disappearing, forests are cut down for profit, and bushes replaced with high-rise buildings. The wilderness of the world has shivered into timber leases and threatened nature reserves (Wilson, 2006).

Environmental deprivation plays a role in children’s lack of interest in nature. With the advance in technology, Nature Deficit Disorder is a problem that faces every child from all walks of life. In order to have future generations that care about the

environment, our education needs to include exposure to nature as a pre-requisite for children's learning, not as one of the outings that children have a year. Kahn et al (2009) found that children in diverse cultures and even harsh urban landscapes can have meaningful relations with nature at least in some respects. Furthermore, White (2004) explains that the loss of experience breeds apathy towards the environment, and when we are alienated from the environment we fail to recognise our basic dependence on nature as a condition for growth and development. Children's connection with nature sets a foundation for their future relationship with the environment. Regular interaction with nature allows children to feel comfortable in it, develop empathy and love it (White & Stoecklin, 2008). If we are to make a difference in the current state of the world, education is the starting point. It is at all levels of education that ideals of a sustainable future can be instilled. The concept of sustainable development has set in motion a course that we cannot ignore. Education in a sense is not the whole answer to every problem, "but education, in its broadest sense, must be a vital part of all efforts to imagine and create new relations among people and to foster greater respect for the needs of the environment" (Rogers, 2005).

Moreover, it is imperative to highlight the hosts of benefits associated with connection with nature in order to drive process that will ensure education systems that are grounded in providing such experiences to children. The benefits include cognitive, social and health benefits that are essential in child development (Rhodes, 2005).

HEALTH BENEFITS	The effects of inactive indoor lifestyles are already evident, with the high rates of obesity, diabetes, and depression (Rhodes, 2005). Interaction with nature has positive physical and emotional benefits, reduced stress, and reduced occurrences of sickness just to a few.
SOCIAL BENEFITS	The natural world is the refuge of the spirit, remote, static and richer than human imagination (Bingham, 2009). Connection with nature also enhances environmental awareness and protection (Fletcher, 2017). Access to parks creates the social and spaces that urban children lack. According to the Natural Learning Initiative (2012) "children and able to get along with others, healthier and happier when they have regular opportunities for free and unstructured play in the outdoors".

COGNITIVE BENEFITS	According to Fletcher (2017) a wide range of positive and emotional effects have been found to be associated with human exposure to nature. Daily exposure to views of nature or natural settings increases children's ability to focus and enhances cognitive abilities (Natural Learning Initiative, 2012).
-----------------------	---

3.10 A way forward: collaborative effort

Prochner, Cleghorn, & Green (2008) state that today we think differently than in the past about preschool and home connections and about the involvement of parents, about parent education. There is a strong advocacy for the family and community as points of entry for interventions (NELDS, 2013). ECD centres are viewed as important institutions playing a supportive role to meet young children's rights to health, nutrition, care, education and protection. As ECD centres still operate under the banner of not for profit (NPO) they have an opportunity to manoeuvre and try alternative teaching methods, operating within the ECD regulations without having to conform to learning standards that may not be appropriate for their context. One of the most valuable resources available for sustainable urban development is the capacity of citizen groups to identify local problems and their causes, to organise and manage community-based initiatives and to monitor the effectiveness of external agencies (Elliot, 2006).

Swingler (2013) and Davis (2009) concur that the central basis of quality ECD lies in *community*, working together as one. In other words, civic institutions, business and civil society must work towards a common goal, and with a common focus. Central to this initiative is the role of the community as a whole. That is to say, members of the community must support teachers at all times (Davis: 2009). Studies on this issue indicate that parents and preschool education institutions hold the greatest responsibility for the child's preparation for primary school (Kayili and Ari, 2014). Furthermore, Lynch (1992) writes that learning does not take place in isolation, rather learning is part of on-going social processes and context that can inhibit or facilitate children's learning. DSD (2006) adds that the needs of the children and their families are complex and cannot be addressed by organisation or department in isolation.

Elliot (2006:68) states that children should not be considered entirely passive victims of degradation but can also be significant actors in progressing sustainability. In

much of the developing world, with few exceptions the recent trend had been for declining overall expenditure on health and on education in recent decades (Elliot: 2006: 68). Letseka (2010) supports the inclusion of the principles, values and practices of sustainable development into Early Childhood Development (ECD) programmes. He argues that this forms solid building blocks for sustainable development of economically viable human resources, and ECD fosters development of capable and productive adults. In order to build a solid foundation for the future generations, the best place to start is early learning/early childhood development.

A Kenyan proverb cited by Pezzoli (1997) states that “we do not inherit the earth from our parents, we borrow it from our children.” Therefore, if human beings are to make any difference now or in the future then we must change how we relate to the world. This can be the first step, by ensuring that the way children learn and view the world is in harmony with an ecological and equitable paradigm.

3.11 The Montessori approach

The preceding section looked at the costs and benefits of environmental connection or lack of for children. This section explores the Montessori Education Method as an alternative and or one of the pedagogies that embodies EfS, environmental care, child centered and as having an ability adapt to local context.

Baligadoo (2014) states that “Montessori saw the child as the messiah and saviour, capable of regenerating the society and human race arguing that a child is not just a miniature adult but has individual and special characteristics”. The Montessori teaching method is known as an approach that embodies the principles of sustainable development in its design. Today there are many alternative preschool education programmes and approaches (Kayili and Ari, 2014), among them, the Montessori Method stands out in many aspects. This method of education is based on the principle that children learn best in an environment that is nurturing and supportive and the notion of a holistic curriculum. Lillard (2013) suggests that children in the crucial years from birth to age 6 possess extraordinary sensitivity and mental powers to learn from and absorb the environment around them. The impact of the environment on children’s learning has far reaching effects that they carry into their future. Baligadoo (2014) argues there is a need to re-educate humankind and

adds that there are two things important for peace in the world, better people and an environment where humanity can realise its aspirations.

Lillard (2013) writes that “Montessori education is characterized by multi-age, a special set of educational materials, student chosen work in long time-blocks, collaboration, the absence of grade and tests, an individual and small group instruction in both academic and social skills”. Although the method is unconventional, the evaluation shows remarkable success in children’s cognitive development and socio-cultural skills. Montessori places deliberate and empathetic emphasis on the concept of work Cossentino (2006). In their writing about education systems in Africa, Okey and Jackson (2006) state that school children learn a great deal that is not in their curriculum, and work involved managing their daily routine of dressing, washing and being able to complete chores without supervision.

On the other hand, Cossentino (2006) highlights literature that criticizes Montessori’s failure to attend to the child’s complex social environment focusing on the specially designed educational materials. As previously stated, the reservations that educators have about the method are its reliance on the specially designed expensive educational materials that are used for the set-up of a Montessori classroom. Margetts (2011) also adds that the method has been criticized for its strong reliance on structured skill acquisition activities involving prescribed materials and teaching routines. The method places a great emphasis on the child’s relationship to the real world, highlighting the respect for a child’s freedom and the stimulating learning environment (Kallen, 1993). The classroom which is referred to as the “environment” by Montessori, represents the real world, with different elements such as art, mathematics, language, gardening and practical life. Although having been heavily criticised for its rigid prescriptive nature in terms of classroom management and materials, the method still allows the children to freely choose their own activities.

Learning about the world in which we live in is a key component of the curriculum Margetts (2011). The notion that all things in the world are interdependent and interconnected is a strong feature of the Montessori education, and is a means for educating children for peace and sustainability. Appreciation of nature, independence and social skills are some of the core skills that are nurtured by the Montessori pedagogy. For Venkataraman (2011) “sustainability is not just an issue to be added to an overcrowded curriculum but a gateway to a different view of curriculum of pedagogy of organizational change and particularly of ethos”. Montessori principles

follow approaches that are holistic and systems oriented attuned to living in harmony with the earth (Sutton, 2009).

3.11.1 The environment

The Montessori classroom provides an environment that is suited to the child's needs and interactions with adults, that helps guide his/her learning in a way that respects each child's abilities. Montessori created an environment that is natural for the child and suited to his/her nature (Standing, 1967). The Montessori teacher places great emphasis upon environment in which the child learns, by becoming the guardian of that environment (Gray and Mabalain, 2012). The teacher becomes a facilitator/guide in the learning environment, where children are free to choose an activity they want. Standing (1967) sums up the Montessori Method that is based on the principle of freedom in a prepared environment. The classrooms are designed according to physical characteristics of children with child sized furniture and learning equipment (Kayili and Ari, 2014). According to Montessori (1992) the first thing that education requires is the provision of an environment that allows a child to develop powers given by nature. The school environment becomes a part of who a child is.

3.11.2 Independence

According to Gray and Mabalain (2012:11), our understanding of how children think and experience the worlds in which they live is limited. Gray and Mabalain (2012:21) point out that Montessori views the course of development in young children as being guided by directives that are already located within the child's nature. Dr Montessori believed that education as it existed then (and still exists) actually harmed rather than benefited children by imposing limits on their boundless potential (Duckworth, 2006). Montessori schools strive to foster confidence and independence in their students (Duckworth, 2006). Some critics feel that some of the materials used in the Montessori Method are too restrictive and limiting to a child's imagination. According to Kayili and Ari (2014), the basis of the Montessori education is to make a child independent and prepare the most suitable environment to support the child's development. Van der Merwe (1988) firmly believes in the need for children to direct themselves in their own learning, stating that "Teachers who let children select their own activities help children build new knowledge onto their past knowledge" (Van der Merwe, 1988). When children are given the freedom to play and learn at their own

pace they develop a skill and mastery that is beyond their years. In their writing about developmentally appropriate education methods, Swazen and Marincwitz (2015) challenge the notion of seeing children as blank slates upon which responsible adults can impart knowledge or truths. In many parts of the world particularly in Africa this thinking prevails.

3.11.3 State of becoming

Gray and Mabalain (2012) state that only in the last 50 years we have really begun to properly understand childhood and child development in any meaningful and measured way. Montessori emphasizes another principle with regards to children's development, the nature of the difference between the teacher and the child (Standing, 1967). And so far as humankind is concerned the child is always in a state of becoming. The adult, on the other hand, has arrived (Montessori, 1992). The process of learning is located in the interface of people's biography and the sociocultural environment in which they live, for it is at this interaction that experiences occur (Illeris, 2007). It is in this state of becoming that children should be allowed a chance to learn and make sense of the world. As such Standing (1967) states "Education cannot be effective unless it helps a child to open up himself to life". Despite the strides we have taken in terms of understanding human anatomy and how children in particular absorb and understand the world around them, "we are not aware of the spiritual germs and creative nebulae that the child hides within himself when he enters this world to renew mankind" (Montessori, 1992). To illustrate the state of becoming, Gray and Mabalain (2012) write that "at the heart of the Montessori method lies the notion of "Planes" or stages that children pass through their learning journey". And it is during the first plane that children experience significant levels of change in the areas of physical, social, and emotional development (Gray and Mabalain, 2012).

Preschool period is very important in human life and education as this period affects the life of a child in the future (Kayili and Ari, 2014). Duckworth (2006) states that such "education made the continuation of man's seemingly endless cycle of war and poverty more likely to continue". If mankind is to create a new order of society with morality and values rather than conquest, power and profit at its centre, education that embodies principles of sustainable development is necessary. Standing (1967) added that one cannot fully appreciate the Montessori Method by simply studying its

principles in the abstract. It is a journey that gives each child individual attention while operating as a community in an environment that is child friendly. What is important to note about the method is that at its core it understands that each child is unique and different not only in appearance but also in how they develop or grow, this being an everyday practice for Montessori educators.

3.12 Conclusion

Despite the ambiguous definition of sustainable development, it is a starting point for thinking about development that does not compromise the ecosystem and future ability to sustain itself. This chapter is divided into five key components. Firstly, I provided an overview of sustainable development underlining the three pillars of sustainability, namely social, economic and environmental. Secondly, a brief overview of the DESD and SDG's 4 and the targets related to education was reviewed, and EfS was discussed as education that puts resilience of the communities at the centre. The key features of sustainability were further introduced as being place/value based, awareness education, cross disciplinary, moral and ethical education. Third, I touched on nature deficit disorder as a condition that speaks to human's connection to nature highlighting its benefits associated to health and other developmental needs. Fourth, ECD was discussed with a keen emphasis on South Africa's ECD landscape with its challenges particularly the schools from the poorer regions of the world. The challenges were stated to have included health, poverty and living conditions. Lastly, I broadly covered Montessori education as a method that highlighted the key elements that make what I believe the method stands for, such as independence, state of becoming and the environment. The child is capable of the regeneration of society and the human race.

CHAPTER 4 CASE STUDIES

4.1 Introduction

The previous chapter presented an introduction to SD, seen as a starting point for debate around development that is not only profit driven. Despite the contention around the ambiguity of the definition, the concept has strong ethical and moral pronouncement. The broader context of ESD and SDG's was laid out with the key emphasis on quality in education and learning. EfS was also discussed with a keen focus on what it means to re-imagine a future where there is balance in how we use resources. Additionally, the global state of ECD was reviewed followed by a deeper look in the South African context. In order to ground the debate about Education for Sustainability, I detailed how the disconnection from nature, particularly where children are concerned, would have a profound impact on how they relate to their natural environment looking at the concept coined by Louv (2008), Nature Deficit Disorder. The Montessori education method was discussed focusing on its value systems being independence, state of becoming and connection with nature and the environment. This chapter will give an overview of two cases. I will attempt to discuss the two contexts, navigating the processes and environment and how they impact children in the context of Education for Sustainability.

ECD in South Africa has an unrestrained opportunity to effect change in how future generations interact with their environment. This due to the level of flexibility in design as it is predominantly privately run and therefore at the precipice to create foundations and set precedence for future learning that is child centred. This chapter will explore the case studies based in Khayelitsha Site C and Lynedoch Eco Village in two ways, by first setting a broader context for both cases and following that focus on each case study by looking at the following areas. These areas are key pillars that form part of running a quality early learning centre.

1. **Community** – the context in which the school exists
2. **The School Environment** – the school at a micro level
3. **Method of Instruction** - pedagogy also referred to as site learning program
4. **Parental Involvement** – the role of parents

I will conclude by drawing on key themes that were uncovered by the case studies, exploring the areas of learning and gaps. In addition, I will then draw conclusions that link the chapter to what I have attempted to achieve in chapter 1.

4.2 Setting the context

I chose two well-known examples of early learning my intention was to provide snapshots of ECD in South Africa through the case studies, one that seems to be working towards EfS and one dominant in the country (aligned with the National Curriculum Framework). This was an attempt to track possibilities for learning for sustainability in two different contexts, to depict contextual SD and secondly, how learning for SD relies on deep understanding of context. I started my research journey in 2014 with both case studies. I was fortunate in being part of the transformation that took place in the Khayelitsha School and part of the learning process that took place thereafter. I have been an eager visitor to the Lynedoch Children's House over the years, the outcomes and findings of this study happened over three years and included visits and conversations with teachers. The chapter will be presented in such a way to answer the following four questions:

What makes for a quality learning environment?

The role of physical (outdoor and indoor) environments in children's development?

How Montessori makes SD explicit in ECD?

Impact of learning that embodies Montessori principles?

The case studies were chosen for two important reasons: context and method of instruction. The study does not aim to compare the cases but to explore how the principles of SD can be taught in environments that are poles apart. The Khayelitsha case study is based in an urban context and has different challenges, compared to Lynedoch that is based in a rural setting and in a village that attempts to live sustainably.

Before I delve into the case study's specific context, I would like to agree with Smith (2002) who writes on place based education and the need to learn to be where we are, stating that "one of the primary strengths of place based education is that it can adapt to unique characteristics of particular places and in that way, can overcome the

disjuncture of school and children's lives". At the heart of the questions for this paper is the value of space/environment and how it impacts children's learning whether laid in a Montessori context or otherwise. To highlight the importance of place and how people relate to it, when the two teachers at the Khayelitsha School were asked, what is a quality learning environment? They responded with "*Big spaces with a playground, trees and gardens. The Cape Town Southern suburbs expensive school's quality learning cannot be replicated in Khayelitsha*". The premise of place based learning is founded on the following key features (Zandvleit, 2013 & Taylor, Jose, Lageweg & Christensen, 2017)

- **Shared Governance** - Communities and teachers working together to establish curriculum goals and design strategies to improve student achievement.
- **Co-Production of the Model** - Community involvement is the central component.
- **Local Autonomy** - Designed to help students learn and capitalise on their lived experience.
- **Capacity Building** - Adaptability to its context thereby equipping learners and teachers to identify opportunities even in poor environments.

Learning can happen anywhere, no matter the place and size. It is the thinking around what the deprivations mean and how to overcome them. Zandvleit (2013) argues that learning environment research offers a compelling case that suggests that the classroom environment can influence or be predictive of student's outcomes such as attitudes, behaviours and learning. It is this lens on place-based learning with which I have documented the following case studies.

4.3 Khayelitsha- GROW with Reaching Stars Educare Centre

4.3.1 The community

Grow with Reaching Stars Educare Centre is located in Khayelitsha Site C, Cape Town. The school is a franchisee of GROW with Educare Centres social franchise, an NGO that helps schools to provide quality education. Kaplan (2017) estimates the township population is in the region of 500 000 although a contested figure. A township notoriously known for elevated levels of crime and poverty. Brunn and Wilson (2012) write that Khayelitsha is probably considered by outsiders as a place

of rampant poverty, high rates of HIV/AIDS, violent crimes and lawlessness, while these descriptions have some degree of accuracy, there are programmes that are targeted at helping youth at risk (economic development nodes). Ngxiza (2011) argues that there are persistent interlocking challenges that necessitate an integrated and holistic intervention including but not limited to poverty, unemployment and inadequate infrastructure. The school is one of the projects however small in scope that adds value in the capacitation of teachers and providing improved ECD services as opposed to the child minding services prevalent in the community.

Additionally, there are no parks in the immediate community or play grounds for extra mural activities, which means the only play areas that children have access to are the streets and home back yards. Furthermore, Ngxiza (2011) adds that urbanisation challenges add to some historical problems of settlement patterns and dynamics. The challenges of large concentrations of people in small spaces are particularly rife in Khayelitsha. This poses serious health and environmental problems for the community. Albino and Berry (2013) write that an estimated 58% of children in South Africa live in poverty and glaring racial and geographic disparities persist- 64% of African children continue to live in poverty compared to coloured- 30% and 2% white children. ECD interventions therefore have the potential to play a critical role in identifying and responding to children who are most vulnerable and have the potential to break intergenerational cycles of poverty.

Physical environment deficit is a challenge for children whether acknowledged or not. Ontong and Le Grange (2015) write the pedagogy of space is particularly crucial in a South African context and can serve as a transformative educational tool to address spatial and political inequalities that are legacies of apartheid. For a quality learning environment, it is essential for teachers to be aware of their learner's sense of place. Figure 4.1 was taken with intention to depict the relationship that the school has with its immediate environment, - none. In a community where safety ranks higher in people's needs the outcome is a school that is closed off to its community. Limiting the children to even smaller spaces in which they spend the rest of their childhood lives.



Figure 4.1 - Khayelitsha school- GROW with Reaching Stars.

4.3.2 The school environment- setting the scene

The school is run from a two-bedroom 35 square meters Reconstruction and Development Plan (RDP) house. In the interest of serving the community and starting her own business, the owner opted to stay in a back room in order to use the whole house for the school. The number of children that attend fluctuates between 18 and 25 children depending on the parent's ability to pay school fees, school holidays, parents work leave days and permanent move to the Eastern Cape. The school has an appropriate teacher to child ratio 3 teachers (includes principal) to 25 children as required by the department of social development. What qualifies as outside play area is a 2x6 metres paved driveway. The lack of space to move freely delays children's gross motor development. Artensson, Boldemann, Oderstr, Blennow, Englund, Grahm (2009) found that children in preschools with a green outdoor environment get higher levels of physical activity, improved motor development and are absent fewer days due to illness compared to children in preschools with a more barren environment. Research on natural physical environment and its effect on children has been covered extensively highlighting its importance. Additionally, the whole school is covered in a high enclosed wall and a gate that has to be locked at all times for safety reasons. Learning and the idea of being in school has been reduced to safe keeping with the having as little external influences as possible.

Referring to the role of physical (indoor and outdoor) environments in children's development, research shows that there is more value in letting children have access to nature, including being in natural light rather than playing on concrete playgrounds. From an early age physical activity promotes quality of life, self-esteem and reduces the risk of widespread diseases. Conversely physical inactivity has serious consequences such as stiffness with signs of metabolic syndrome occurring in early childhood and adolescence (Pagels, Raustorp, De Leon, Martensson, Boldemann, 2014). In this particular school there is no interaction with the natural environment and children have to be bussed into other communities in order to access a park. On the question of the role of physical environment, Mtshengu (2017) responded, *"What can we do there is no space, and alternative means of encouraging physical development are expensive, like building a 2-tier house"* which meant opening up the lower rooms so children can play freely.

Furthermore, Ontong and Le Grange (2015) argue, in order to have the environmental debate matter, teachers and learners need to recognise the importance of space and what it means to them. Abrahams (2017) a teacher at the centre, expressed her discontent with the lack of space in her school as she felt *"it hinders children from becoming free spirited beings"*. The role of teachers and value systems accompanied with quality training plays a major role in how children learn despite their environment. All the teachers and principal are trained through the FET colleges in Cape Town doing level 1 to 5, foundational early childhood qualification. In terms of teaching, GROW with Educare Centres provide a prescriptive curriculum that aids teachers in organising their day and plan using resources that are easily available to them. Previously the school struggled with providing the basics such as glue for art projects, GROW provides the resources in order to encourage teachers to use materials and mitigates despondency that is a reality in resource poor schools. The curriculum developmental areas of children with guidelines on what to do for each age group. This "school in a box" method is used in environments where there are less materials to begin with.

Additionally, in early child care settings teachers play a significant role in creating a safe, responsive and supportive classroom climate and in educating and socializing young children (Jeon, Buettner and Hur, 2016). Teacher's quality has been typically examined by professional qualifications and education credentials, but teaching is complex and goes far beyond classroom management and educational qualifications. The internal processes of each individual teacher should be taken into account, from

attitudes around teaching to job satisfaction, things that are not easily measured by a test or taken at college. Teaching is a people profession and complex in nature with different variables that are forever changing and out of the control of the school. The GROW model recognises that teaching training tends to be abstract and does not translate into real learning, hence the prescriptive curriculum that serves as a base or starting point. Teachers at the school have the nationally recognised ECD courses from level 1 to 5. The courses are offered by FET courses full time and part time for those who are already in the workplace. One of the purposes of the courses as laid out by the College of Cape Town is to enable ECD practitioners to use their knowledge of child growth and development from birth to six years (Capecollege.co.za, 2017). Teachers continue to attend short courses on different areas such as inclusive education from local organisations to supplement and upskill themselves in the field.

4.3.3 Method of instruction

GROW with Educare Centres offer a “school in a box” and a “business in a box” and are trained on all the elements of operating a school (www.growecd.co.za, 2017). The school in a box is a model that provides everything an owner needs to run a school except for a school structure/building. Rangan and Lee (2010) write the model of school and business in a box provides standardized operations across the board. Education and financial mentors consistently maintain the standard of the franchisee. This means there is continuous monitoring and evaluation which leads to accountability and change in attitudes. The curriculum offered is simplified as it provides an outline of what the teachers do each day to a term covering different themes that are connected to materials and consumables provided. What the curriculum offers is the baseline of quality teaching for those coming into the program for the first time. However, as the teachers get accustomed to the program they begin extending the activities and explore different ways of working with materials.

The curriculum is designed in unification with the milestones that are compliant with the National Curriculum Framework [NCF] and National Early Learning Development Standards. Teachers can easily understand what each activity and interaction with the children means and how it adds value to their development. In the table below, I have touched on the themes that are covered in the NCF that help to answer one of the questions for this paper, what makes a quality learning environment? The table

below extracted some of the themes and principles that are child centred, context based and uphold the role of parents and caregivers in children's development.

THEME 1 I am a competent person.	PRINCIPLES 1 I am a competent person who actively creates my own identity and my own understanding of the world.	REFLECTIONS It has been argued that it is difficult to teach children about values of SD however the identity formation stage is the best place to start.
THEME 2 My Learning and Development Is Important.	PRINCIPLES 6 Appropriate local and indigenous knowledge and skills are resources that can be used to promote socially, culturally and linguistically sensitive learning environments for me.	REFLECTIONS This principle brings into play and highlights the importance of contextually relevant pedagogies that embrace local context, heritage, culture and indigenous knowledge that has invaluable teachings for young minds.
THEME 3 I Need Strong Connections with Adults.	PRINCIPLES 9 Parents and families in their different forms play a central role in my overall development.	REFLECTIONS Parents and families are at the heart of quality ECD and have been then underutilised resource. The models of change such as place based learning will not be possible without the vital input of parents.

Table 4.1 – Principles informing the National Curriculum Framework (2016).

4.3.4 Parental involvement

Parents and caregivers are the most underutilised resource in terms of driving quality education in the ECD space particularly in underprivileged communities. There are many different reasons as to why this is the case, ranging from South African education history, to lack of awareness or knowledge about the importance of stimulating children's development in their formative years. At the Khayelitsha School, there are only four parental meetings a year and that is as far as parental

involvement is concerned. Abrahams (2017) highlighted that *“the only time parents come to the school is when something is wrong or have come to complain but seldom on checking how the child is doing and how they can work together”*. Bruce (ECD conference, 2017) states that children come attached to families and we need to take care of that. Parents and families play a fundamental part in children’s learning and real change in the ECD space will happen when there are intentional interventions involving parents and caregivers.

Parental involvement in early childhood intervention is viewed as an essential component of programmes for promoting child learning and development (Dunst, Bruder, Espe-Sherwindt, 2014). There are attempts to host consistent parenting skills workshops in the GROW with Educare Centres. Robinson, Lee, Dearing and Rogers (2017) argue that parental beliefs about the value of the daily attendance in preschool and primary school may be a barrier to mobilizing parents to improve their child attendance. The key lies in educating parents on the importance of attending school daily in the early grades. There needs to be emphasis on the value of attendance to form a better foundation for future learning. Parental involvement in children’s learning in Khayelitsha School remains a challenge, this is dominant during March and September school holidays where parents opt to have their children cared for by their older sibling which causes setbacks in the children’s progress. The majority of parents still view preschools as places of safety, child minding with minimal added value for their children’s cognitive development.

4.4 Lynedoch Children’s House

4.4.1 The community

Lynedoch Eco Village is located about ten kilometres outside of Stellenbosch towards the N2 (Dowling, 2007) and was founded in 1999 and managed by the Lynedoch Development Company (LDC). The goals set by the LDC include having a mixed community organised around having a child centred learning precinct. The village is set against the backdrop of one of the most unequal societies in South Africa, Stellenbosch (Stellenbosch IDP, 2015). It is one of the towns in South Africa that maintained the apartheid divisions, with community that have maintained the status quo with little or no integration and stark differences between the very rich and very poor. The town has become primarily known for wines and its fruit. With that comes a history of “Dop system” (arrangement by which workers are given alcohol as

benefit of employment). Generally, Stellenbosch is the hub of alcohol manufacturing, despite the job opportunities produced by this industry, the effect of alcohol abuse particularly in pregnant mothers has lifelong effects. The farm worker community is characterised by abject poverty as community members are employed as seasonal workers in the surrounding farms. Spies (2011) reported that the legacy of the Dop System is prevalent, as seen in the high cases of Foetal Alcohol Syndrome [FAS]. May, Gossage, Marais, Robinson, Viljoen et al (2007) define FAS as a pattern of anomalies and developmental deficits in children who were exposed prenatally to large amounts of alcohol. When asked about the reality of working with children whose parents expose them to alcohol before birth, Mabeba (2013) shared the challenges they face in working with children with FAS. These include hyperactivity, and other documented learning difficulties related to FAS.

Furthermore, the Village is home to Sustainability Institute, SPARK Lynedoch Community School, and Montessori Children's House. Lynedoch Eco Village is also a site for scientific and cultural interest for research linked to the environmental interventions and daily practice as a village finds ways to live together across real and imagined differences (SustainabilityInstitute.net, 2017). Organic food gardens, water recycling, worm farm and composting are some of the ways that the village sets precedence in achieving living that is harmony with the environment. The Sustainability Institute offers a range of learning programmes (that include Lynedoch Children's House, Learning for Sustainability, the undergraduate and postgraduate qualification in Sustainable Development and a partner organisation Indaba Montessori Institute), consultancy and programmes such as iShack and food systems centre. The Indaba Montessori Institute (IMI) makes use of the ECD centre for training and observation space for training 0-3 and 3-6 year olds teachers.

Lynedoch Children's House - the key focus of this study was started in 2000 by Lynedoch Development as a response to the lack of any form of preschool education for local farmworker children in the area (Swilling and Annecke, 2006). Sustainable living values are evident in the way the village functions with alternative energy sources, waste management systems and water treatment systems (Swilling and Annecke, 2006). The school is set in a rural context with access to amenities that children in the urban context do not enjoy, such as access to open fields, trees and gardens. The school is an integral part of the community. Children are at the centre of achieving and sustaining social integration at the Lynedoch Eco Village (Swilling & Annecke, 2006). Although it should not be regarded as a privilege but a right,

children at the Lynedoch Children's House are privileged to be part of a community that not only values their safety and well-being, but that finds ways to help them reach their full potential. In the morning the teachers have the option of taking children on a walk through the gardens and they experience what it means to be in nature. Murray (2015) found that children's interaction with their physical environments are identified as an important feature of early childhood pedagogy.



Figure 4.2 - Lynedoch Children's House.

4.4.2 The environment- setting the scene

The school is run from an open plan classroom that comfortably accommodates and caters for 67 children. There is a sense of calm and structure as you walk in the door. Children are engaged and at peace as they go about doing their activities. Lillard (2007) writes a Montessori classroom is usually a large, open space with low shelves and tables with child size chairs that seat one to four children. The school classrooms are arranged into areas with materials that suit the specific working area. The school has an art area, practical life area and two classrooms that cover a range of activities from numeracy and science to literacy. There is also a separate house that caters for children younger than three years. This too is divided into sections/areas that cater for different developmental needs of the children. The materials are designed to attract children's interest and teach concepts via repeated use (Lillard, 2007).

According to Mawson (2014) outdoor play environments offer a wide range of potential affordances to both teachers and children. At the school, children experience outdoor environments as places of meaning and significance. A response to a question about what the role is of physical environment in children's development, Schulschenk (2017) indicated that "*children are taken out daily to the food garden in order to be part of the growing experience and also take part in the harvesting*". Looking after the environment is part of the children's everyday life, from sorting waste, putting things back after use and being aware of their role in maintaining and looking after their space. Nature is also incorporated in learning. The school exists in a context that embraces the concept of living in harmony with nature and people and therefore provides an opportunity for learning that is not limited to a classroom. Access to nature and garden means that the children do not experience the deprivations that the majority of South Africans do.

There has been a growth in literature relating to children's outdoor play in the last decade. Much of this focus has been driven by the increasing concerns of a growing disassociation with the natural world in children's lives. According to Mawson (2014) for play space to be effective it needs to provide interest and give the children choices so they keep revisiting and finding different ways to explore the material. The classrooms are designed to reflect everyday life and allow children an opportunity to do work they would do at home, not because it is a chore but because it is part of living and an extension of who they are. Practical work is one of the key features of the Montessori Method. Webster (2015) Bhatia, Davis and Shamas-Brandt (2015) highlighted the value of practical life in that it also develops children's fine motor skills. The schools engage in using a variety of hands on materials aimed at helping the children concentrate, develop a sense of order and independence and develop fine motor skills.

Furthermore, the emphasis has been on high quality teacher development with the Montessori context linked to the inner development of each individual (Mabeba, 2017). "We cannot teach what we do not know". The value of continued mentoring and support is immeasurable with regards to learning deficits experienced by many South African teachers in the past as a result of Bantu education (the educational scheme for Africans during the period of the shortage of labour in mines and growing enterprises in the country) and other factors such as school dropout. "People are generally happy with what they do not know, it is easier" Erasmus (2017). The school

principal has been intentional in training and encouraging teachers to learn and develop, what Schulschenk (2017) refers to as **deepening capacity**. Deepening capacity is an ongoing learning process that occurs each day. On her book, *The Absorbent Mind*, Montessori touches on the role of a teacher. She writes that “when a teacher begins work at a school must have the kind of faith that the child will reveal him/herself through work, therefore should free herself from the preconceived ideas concerning the levels at which the child may be” (Montessori, 1992:343). This thinking goes against the traditional schooling system that already predetermines where a child should be able to do. Montessori challenges the notion of uniformity. As directors/guides who are NOT beneficiaries of Montessori education, the process of guiding and being part of the Montessori environment not only enriches the child, but helps the adult identify areas of development in their own lives. At Lynedoch Children’s House the principal started giving short tests weekly as part of in-house training in order to upskill and boost the teacher’s confidence in working with the materials.

The structure of Montessori education allows the children to learn at their own pace. The role of the adult is therefore to guide, direct and facilitate through observation (Erasmus C, 2017). The teachers at the centre are Montessori trained or in the process of acquiring their qualifications. The role of the teacher is not imposing their ideas and knowledge but to guide and direct children towards the discovery of self, unlocking the child’s love for learning and engaging the awe and wonder that comes from inside (Lopota, Wallace and Finn, 2005). *“We discovered that education is not something the teacher does but is a natural process which develops spontaneously in the human being. It is not acquired by listening to words but by virtue of experiences in which the child acts on his environment. The teachers task is not to talk but to prepare a series of motives for the cultural activity in a special environment made for the child”* Lillard (2007:255).

4.4.3 Method of instruction

Furthermore, underlying Montessori education is a model of a child as a motivated doer, rather than an empty vessel. This in contrast to the education model where a child is seen a blank slates needing to be filled by the knowledge of the adult. Children have the freedom to choose the activities they want to engage with. Children choose what they want to learn based on what interests them. It is easy for

one to think that children are allowed to do whatever, and however they like. Erasmus (2017) explained that the method provides freedom with limits and consequence. Attention to structure, community and respect for the needs of others are highly valued. Lillard (2007) writes, Montessori classrooms are a contrast of the traditional classrooms in having a pristine appearance, extra materials are kept out of sight and rotated in and out of the classroom. The natural colours and few or no bright colourful pictures on the wall provide the pristine look that Lillard writes about. Every material has its place in the shelves and children are taught to neatly pack and put back every material they use ready for another child (Lillard, 2007).

For Holmes (2016) a Montessori classroom can be described as a multi age setting with a prescribed set of educational materials where the student selects his or her own work and takes his/her time to complete. Lopota, Wallace and Finn (2005) in "Montessori classrooms children spend three to four hours per day in self-selected individual or small work groups, and spend less than one hour per day in whole group instruction". Children get involved in activities or occupations that could strike one as "out of place" for a school or classroom but no other interactions which could be undertaken by the child at this stage can be more important for their whole development, physically, mentally and morally (Bhatia et al, 2015). I observed a two-year old child who was deeply involved in an activity of painting and cleaning up afterwards which took almost forty-five minutes to complete. The work was done without adult's direct supervision and the child enjoyed the work and needed no extrinsic praise when the task was done.

Additionally, Lillard (2007, 29:33) discusses the eight principles of Montessori education derived from her observation of children which underline her approach to schooling

Movement and Cognition	Value of movement and play - play is the fundamental area of children's development, guided or free play. The traditional education method of sit and listen method is not effective research shows that education should involve movement to enhance learning.
Choice	Freedom to choose and taking responsibility. Kayili and Ari (2014) children go through a unique development process and is unique to each individual and learn in line with her or his capacity
Interest	In the Montessori context children are treated as individuals the idea of mass produced knowledge is abandoned and therefore in driving their learning children have an opportunity to spend more time on activities that most interest them. School becomes a place of fun and enjoyment and learning not associated with negative feeling or emotions.
Extrinsic Rewards Are Avoided	Compared to traditional schools, children in the Montessori school need less constant recognition by teachers. There is less "teacher look" which happens when children are not taught to seek validation from themselves. For someone from the traditional education it could be unnerving to see child given the freedom to be without the adult's constant intervention.
Learning with And from Peers	Children learn more from their peers than from adults. Children prefer working alone in the preschool years but observe each other. Erasmus (2017) shared that at the Montessori school children are taught to wait their turn and not disturb someone when they are busy working.
Learning in Context	In traditional schooling children sometimes learn without understanding the relevance of what they are studying. One of the things that Erasmus (2017) appreciates about the Montessori is that children learn about things that have relevance to them, such as learning about their culture and heritage to environmental issues such as waste management and biodegradable products.

Order in Environment and Mind	<p>There is order in Montessori environments which might not work for those with the view that louder and brighter environments are what children love and desire. A working society is one that functions in freedom with limits or boundaries and consequences, where we each of us are mindful of others. Baligadoo (2014) argues that “a child that has not learned to be autonomous and master of his/her actions is recognizable in the adult who is dependent on others and unable to make his/her decisions”.</p>
Teacher Ways and Child’s Ways	<p>Learning beyond what the teacher knows. According to Kayili and Ari (2014) “Montessori frees knowledge from being memorized and made it concrete”. The basis of Montessori Method is to make each child independent and prepare an environment to support the child’s development (Kayili and Ari, 2014). Baligadoo (2014) writes that “Montessori saw a child as a saviour capable of regenerating the society and human race, arguing that the child is not merely a miniature adult but someone with individual self and special characteristics”. The adult should not try and defeat the child by repressing such unique self.</p>

Table 4.2 – Eight Principles of Montessori Education (Lillard, 2007).

4.4.4 Parental involvement

Mabeba (2017) shared that she would like to start parenting skills workshops in order to engage parents in how they can add value in their children’s development by extending what they do in school. Both schools host the department of social development mandatory 4 parents meetings per year. In reality after having done the hard work of training the children to be independent and giving them the freedom of choice they still have to go home to parents who at times see no value in allowing children to be independent. Like many schools, the children experience setbacks after long school holidays and from being kept at home for longer periods of time. The primary caregivers have a role to play in spearheading a learning process that puts the child at the centre. Additionally, one of the key ideas shaping (NCF, 2016) is

the importance of families, “families are the first teachers of their children”. It is from families that children learn about beliefs, values, customs, and manners and what it means to be valued and cared for and what it means to care for others. At the heart of the sustainable development debate is care for the environment and other human’s needs (UNSDSN.org, 2014). A brief of ECD states that children are a common basis for all dimensions for sustainable development, and no advances in SD will occur in coming decades without multiple generations contributing to societal improvement (UNSDSN.org, 2014). Beyond sheer survival children have the right to thrive, to develop their potential and live in a sustainable world. Both families and teachers have the role in instilling the SD values and thinking in children while they are young.

4.5 Making the connections

In the following section, I will reflect on both methods of education and how they answer the 4 questions:

What makes for a quality learning environment?

The role of physical (outdoor and indoor) environments in

How Montessori makes SD explicit in ECD?

Impact of learning that embodies Montessori principles?

Holmes (2016) writes about three elements within the Montessori pedagogy of learning, the role of the teacher, role of the prepared environment and role of materials. The GROW with Educare centres model offered something close to what Montessori education is trying to achieve in terms of placing the child first although far apart in terms of execution. The prepared environment is a key focus on how a GROW school is run. None of the teachers I interact with have Montessori training, and therefore in my attempt to create an active learning environment, I started with a drive that encouraged teachers to “allow children to experiment, and not do for the child what they can do themselves. Additionally, in both case studies the role and the impact of outdoor and indoor environment was evident. Acar (2013) argues that humans are born with a stimuli they derive from the environment which influence their physical, cognitive, social, and emotional development and learning. Consistently research has shown the benefits of an environment both inside and out that allows a child to be free, explore and be creative. An individual is both the centre of his environment and the element of that environment, and cannot be separated (Acar, 2013). Lovelock (2014) observes that we are moving to nests called

cities and the implication are intriguing and might mean that we have reached the end of our separate evolution. As we become part of the automated world, while moving to smaller and overpopulated cities, what might it mean to preserve our connection with nature? The Khayelitsha School is a typical example of an environmentally deprived urban school, it is easy to become hopeless in such situations however the key lies in engaging oneself in seeking solutions for the context we find ourselves.

Montessori believed that nature herself determines the child's early conduct but this can only evolve by contact with the world about him/her (Montessori, 1992:213). The underlying principles of Montessori education align with the SD goals discussed in Chapter 3. Montessori teaching is about identifying and valuing the interconnectedness of all living beings, not only humans. What if our education taught children that recycling, reusing is part of how we live, that refuse that gets collected by the municipality does not go to an unknown invisible place, but goes to a landfill that emits gasses which affect the biosphere. In his book on Life Enriching Education, Rosenberg (2003:2) advocates for "education that makes people aware of the interdependent nature of their relationship and value the needs of others being met equally to their own being met and know that their needs cannot be met at someone's, or the planet's, expense". It is evident in both case studies that the advancement of the SD values will happen through collaborative efforts from different stakeholders involved in the ECD space. I conclude to with the quote from Fulghum (1989) "all I needed to know I learnt in preschool". At school children learn to share, out things where they belong, respect for others, to do something every day, learn something, think about something, keep together and be aware that wonders occur all the time (Samuelsson, 2011).

4.6 Conclusion

Drawing on one of the objectives that were to observe two case studies for explorative purposes, this chapter provided an overview of the community in which the schools operate. The stark contrast between the two, speaks to the unequal nature of our society where one group of children have access to nature and safe walks while another has little or no contact with nature living in very unsafe environments. Additionally, I presented a picture of both the schools and how the environments impact learning. As part of observing how the schools function, I

discussed the role of teachers and their attitudes towards children learning the value of space and their personal development. The structure of teaching employed at the schools highlight the value of each method. The GROW with Educare Centres model is based on the NELDS and NCF, the Lynedoch children's House uses the Montessori Method. The key difference between the two is that one is based on what the adult does for the child and another on what the child can do for him/herself. The value of parental involvement could not be understated in both contexts; it was highlighted that parents are the greatest resource in driving quality education in the ECD space. The crosscutting theme from this chapter was the value of context based education. The following chapter will delve into themes that emerged during the research process and how they attempt to address the research question in chapter one.

CHAPTER 5 EMERGING THEMES

5.1 Introduction

The preceding chapter painted a picture of what I observed and experienced in the context of my research objectives as laid out in chapter 1. This was done by setting out a broad context for the case studies including a focus on communities, the school environment, the method of instruction and value of parental involvement. This chapter has intention of further exploration of the questions and to attempt to make the cross cutting themes that emerged from the research process explicit. The participatory research method used for research meant spending time at both schools, having conversations with teachers, parents, observing at ECD forum meetings and attending ECD conferences. The themes rose during the period of observation and data analysis. Using content analysis as a method of data analysis, this chapter presents overarching themes that materialized during the process of data analysis. The method is useful in identifying trends and patterns in large amounts of data. The themes emerged during the process of research that included individual interviews, group discussions, conferences, and ECD workshops. The following themes will be discussed:

Missed Opportunities for Lifelong Quality Learning	Meier (2014) argues right foundations for learning must be laid in the period before formal schooling starts, or the window of opportunity for lifelong learning is long. A best start to life ensures better future growth and learning.
Hope Education	Hope Education is not a formal term but a cultural term that represents a state of helplessness, where someone does as little as possible and hopes for greater rewards.
I Care for Animals and the Environment	The NCF failed to include the value of environment, animals and their relationship to human learning and development.

Quality Education	Quality education is perceived / judged based on the extent to which it fosters key capabilities that individuals, communities and society in general have reason to value. Education should therefore be such that it helps an individual realize their full potential whether or not in adverse conditions.
School Readiness	Having attended a preschool, are children prepared for formal schooling and completion.
Mentoring and Support	Value of mentoring and support cannot be stressed enough in a south African context and its history. The history of poor education in south Africa coupled with constant changes in policy is reason enough to drive mentoring and support, particularly those who are less privileged.
Community Engagement and Collaboration	There is also value in collaboration and learning from each other, sharing information, resources and together finding innovative ways of being.

Furthermore, this chapter attempts to ascertain if the themes identified link to the research objectives for the study. The objectives were to participate in creating a learning environment, observe two case studies for explorative purposes, to participate in infrastructural upgrade and resource provision and to explore the implication of Sustainable Development goals in ECD as spearheaded by the United Nations and launched in September 2015. The conclusion will summarize what I have attempted to achieve, alluding to gaps that could have been missed and opportunities for collaboration.

5.2 Missed opportunity for lifelong quality learning

Investment in early learning has deep implications for South Africa particularly in economic gains. Meier (2014) makes an economic case that shows the rate of economic return on pedagogic intervention as an investment made in the early formative years of a child's being significantly higher than for any other stage. She continues to argue that on productive grounds it makes sense to invest in young children from disadvantaged environments. Quality early education is one of the

strongest predictors of success in different areas of a person's life. It is imperative that the period or phase of life that yields the greatest results is not missed. According to Montessori (1992:3) the child's true constructive energy, a dynamic power has remained unnoticed for thousands of years. The period of infancy is undoubtedly the richest. It should be utilised by education in every possible way, as the wasted time of this period can never be compensated. Schulschenk (2017) found that ECD *"is the most under invested sector, the government spends more on primary school education than they do on ECD and by then the opportunity is missed"*. It is generally acceptable that "catching children while they are young" yields better results in the future. There are two aspects that were consistent during my research pertaining the theme of "Missed Opportunity for lifelong learning", the nature of a child and the benefits of starting early.

Nature of a child - it seems understanding the nature of a child and how he/she views the world is an important aspect of learning and development reflected in both case studies. The questions on children maturity and ability to comprehend complex issues related to ESD has been asked in many research papers. Montessori views on the child capabilities continue to be side-lined in mainstream education. The NCF acknowledges that children are aware of themselves as capable and confident learners. However, what it means in practice is that the child's confidence and capabilities is fostered by adults/teachers knowledge not knowing unto him/herself. Theories of child development have been focused on the order of biological development as a precondition for children's learning (Samuelsson, 2011). Though useful this knowledge hinders adults from seeing children as independent thinkers capable of solving complex challenges. Montessori believed in education that helps a child open up to him/herself. As previously touched on a section on systems, children have been proven to have an ability to understand complex systems.

The benefits of starting early – there are undeniable benefits of starting early in the ECD and SD debate. Part of the motivation for research in this field was the desire to find what it might mean to start EfS at an early age. Unfortunately, we no longer live in the world where children are sheltered from the harsh realities of the world. The benefits of starting early go beyond cognitive development of a child, to include care and knowledge of heritage and culture, care for others and environment. The standpoint that children are able to make sense of the world is observed in brain research where young children's windows of opportunity for learning are made visible (Samuelsson, 2011). Interestingly, in her book *The Absorbent Mind*, Montessori,

observes that “our minds as it is would not be able to do what the child’s mind does. To develop a language from nothing needs a different type of mentality that a child has an intelligence that is not of the same kind as ours”. A kind of mental chemistry goes on within him/her (Montessori, 1992:30). ECD work is about setting a trajectory for the future development prospects in all spheres of life.

5.3 Hope education

Erasmus (2017) believes we can no longer offer hope education, i.e. ‘*Do as little as possible and hope the children will turn out fine*’. If South Africa continues to provide “Hope” education, we are likely to face the same challenge in fifty years. *Hope Education* is not a formal term but a cultural term that represents a state of helplessness, where someone does as little as possible and hopes for greater rewards. Facilitation towards quality learning will start when we collectively work together for change, challenging gatekeepers and work diligently in little clusters and communities. In her writing on critical hope, Boler (2014) writes that this millennial point in history questions cynicism and despair and hope arises at every turn, especially in the struggle for transformation in education. She further states that while the sense of despair and fatalism are readily apparent, establishing compelling evidence of hope is more elusive. However, for many committed educators the impulse towards critical theoretical and political work in education are fueled by a passion for social justice, economic equality, human rights and sustainable development, or simply, an education that is worthy of its name, - A commitment to connecting education to the process of building a more democratic society (Apple, 2014). In order to drive an agenda on EfS, a paradigm shift in how we approach the urgency in ECD is necessary, at both a national and local level.

Over and above the issue of numbers and infrastructural backlog, the focus needs to be in the type of education offered. In his book on *Life Enriching Education* Rosenberg (2003) calls for a shift in values and a change in the entire underlying education system. The change is child based and alludes to different ways of being and exploring different environmental modes. Tobin, Boulmier, Zhu, Hancock and Muenning (2015) write that despite being in a refugee camp in Burma, children were able to learn using the Montessori Method under difficult circumstances. However, for Abrahams (2017) quality schools do not exist in Khayelitsha, particularly in an area that is rampant with crime and poverty such as Site C. Number 10 of the trans global

principles for quality ECD highlights that “quality education is about three things: the child, the context in which learning takes place and the knowledge and understanding which the child develops and learns” (Bruce, 2015). The UNSDSN (2014) reports that “investment in early learning and development results in greater cost savings than investment later in the life cycle”. It is pointed out how vital a small, simple environment, beautifully kept, would make a significant impact on the spiritual, cognitive, emotional and physical wellbeing of the child. Atmore, Van Niekerk and Cooper (2012) support this by stating that the investment in ECD has spins-offs for not only those being educated but also the ECD workforce trained and supported. Not only do the children benefit by being in an ordered, well kept, quiet and calm learning space, but so do the staff.

An important factor in developing competence in children in ESD is the teacher’s knowledge and understanding of the concept in this way may be able to answer questions related to ESD in young children’s everyday life (Samuelsson, 2011). Literature on EfS in ECD highlights the needs for teachers/educators beyond ECD the basis of SDG’s, the principles of sustainable development. Learning about SD is contextual however the thinking around it remains inaccessible to those who are greatly affected by the resource depletion and environmental changes. Even though the conversations about ESD are not easy to introduce at an early age, they can be broken down and be part of a directive that guides South African education. In the past 2 years I have been visiting many ECD centres around Cape Town, mostly in townships and informal settlements. Some are thriving while others are overcrowded with minimal stimulation and creative activities. With the state of early education in South Africa, I concur with Erasmus that we can no longer hope that children will turn out alright not having invested completely in their development.

5.4 I care for the environment and animals

Chapter 4 highlighted the urgency for education that is contextual in nature, set in societies and circumstances that people find themselves. Touching on the question I asked about the role of physical environment in ensuring quality education. The particular section explores the missing theme in the NCF, articulating the gaps in thinking on ESD in South African government. Although it appears a well thought out document, the NCF which is a guide for South Africa’s curriculum development missed one key theme: children’s connection to the environment and animals

5.4.1 I care for the environment

The environment is instrumental in influencing learning in children, the child absorbs his/her environment and re-incarnates himself or herself in it. With its unlimited possibilities, the child can well be a transformer of humanity just as s/he is a creator (Montessori, 1992:83). The importance of an environmental connection was evident in both case studies, with one school having limited access to the natural world while the other school has walks in nature as part of their daily activity. A lack of connection with the environment may mean that children may turn out to be adults who are not sensitive to their environment. In urban settings it is a challenge for educators to provide experiences in outside areas such as growing food and flowers and showing how insects and other animals contribute to our world (McCall, 2017). According to research on Biophilia (innate connection to nature), children naturally see themselves as more than part of the human world but having a responsibility for others, the environment and other living organisms. Children at Lynedoch Children's House not only take part in the farming but also in waste management. Waste sorting is part of everyday life. Erasmus (2017) reports that teaching children about self should go beyond taking care of one's self and also include the environment and others. The SD goals in the areas such as poverty, health, education and many more must be tackled together, not separately and intergenerational vision of societal development must underline these goals. Without vision for the next generation there will be no capacity for nations to actually bring about sustainable development (UNSDSN, 2014)

Furthermore, there is evidence that suggests that the outcomes associated with children who are disconnected from nature include diminished health, obesity, reduced cognitive and creative capacities, lower school achievement and Attention Deficit Hyperactivity Disorder (Charles, 2009). Evidence also indicates that the best antidote to stressful lifestyles is spending time in natural settings in the outdoors. Children are happier and healthier if they have frequent opportunities for learning in nature based settings as an integral part of their everyday lives (Charles, 2009). There are benefits to being in nature or outside such as gross motor development, the use of senses and most importantly the freedom to simply "be". When the Khayelitsha School takes children to the park outside the community, the difference in their behaviour is obvious. The joy and freedom the children exude is clear for anyone to see and food and sleep time are quickly forgotten. Direct exposure to nature is critical for physical and emotional health of children and adults. Research

shows that exposure to the natural environment can reduce stress, promote a sense of peace, promote a sense of place and societal connection. (Barad, Dicken, Hitzenmann, Riccio and Struzenberg, 2016). The evidence is clear in that regardless of where we come into contact with nature, an urban park, gardens, or remote, pristine areas it is beneficial for human health. This connection will set a trajectory of future adults who have empathy for others and the environment. However, there have been arguments that there are no guarantees that exposure leads to care, but a valuable starting point nonetheless.

5.4.2 I care for animals

According to Barrett and Broesch (2012) humans have a rich source of information about their local environment, culture more than any species. The early years are important in introducing care for the environment and other living organisms. Wiens (2016) maintains “climate change is an important threat to the world’s plant and animal species including species on which humans depend”. The anthropogenic climate change is a major driver of biodiversity loss in the next 100 years. In his book on Life-Enriching education, Rosenberg (2003:3) envisions an education program where students learn to value their autonomy and interdependence and would have learned skills necessary to create life-enriching systems. ESD should be such that children are prepared and knowledgeable of the condition of the world we find today. ESD should foster learning that encourages care for animals and the environment. Research on children and animals touch on cognitive, social and emotional development and involve diverse sub-populations of children (Endenburg & Lith, 2010). There are benefits in having children establish care for animals both domestic and wild. The high levels of wildlife trafficking that threaten biodiversity in South Africa is a clear indication of the lack of care for animals for the perpetrators of the crime (Haas & Ferreira, 2016). The response to the crime has been stricter laws and firm security that has not yielded better results.

5.5 Quality education

Early learning is impacted by the quality of education provided. There has been contention as to what quality education means and what it entails. Frempong, Reddy and Kenjee (2011) define quality schooling in terms of social justice theory and capabilities, “stating that education is characterised in terms of its relation to fostering

key capabilities that individuals, communities and society in general have reason to value". Therefore, quality education is possible even in deprived environments as long as those communities find distinctions that make a place work. When asked about what quality schools look like, Abrahams (2017) from Khayelitsha School *"believes that quality is unattainable in their environment and is only available for the rich and elite"*. Atmore et al (2017) found that children from low resource environments who have not participated in quality ECD programmes cannot regain missed opportunities for development. It is therefore critical to introduce these programmes at an early stage. In the table below, Bruce (2015) attempts to define what quality education entails from a global perspective.

The best way to prepare children for their adult life is to give them what they need as children.	Children are whole people who have feelings, ideas and relationships with others, and who need to be physically, mentally, morally and spiritual healthy.
Subjects such as mathematics and art cannot be separated, young children learn in an integrated way and not in neat, tidy compartments.	Children learn best when they are given appropriate responsibility, allowed to make errors, decisions and choices, and respected as autonomous learners.
Self- discipline is emphasised. Indeed, this is the only kind of discipline worth having. Reward systems are very short-term and do not work in the long term. Children need their efforts to be valued.	There are times when children are especially able to learn particular things.
What children can do (rather than what they cannot do) is the starting point of a child's education.	Imagination, creativity and all kinds of symbolic behaviour (reading, writing, drawing, dancing, music, mathematical numbers, algebra, role play and talking) develop and emerge when conditions are favourable.
Relationship with other people (both adults and children) and the natural world are central importance in a child's life.	Quality education is about three things: the child, the context in which learning takes place and the knowledge and understanding which the child develops and learn.

Table 5.1- Trans-Global Principles of Quality Early Childhood Development (Bruce, 2016).

The National Development Plan acknowledges “ECD as having a critical role to play in achieving socio-economic success in South Africa, and one of its objective is that ECD should be a priority among the measures to improve the quality of education and long terms prospects of future generations”. There is consensus in terms of what is required to achieve equal South Africa, however this vision has not translated into formidable action yet. The first SD goal is to ensure that all human beings can fulfil their potential in dignity and equality. Protecting and supporting ECD is essential to enable every human to reach their full potential (Richter et al, 2016). The different views as to what constitutes quality education plays a huge role in designing curriculums that are context based. Cultural values and beliefs about the value of early education need to be considered.

5.6 Value of parental involvement

In Chapter 4 the value of parental involvement was covered in depth, parental views on what quality education means play a huge role particularly in areas where ECD centres are seen as places of safety more than learning. Richer et al (2016) found value in designing programmes that reach women and children during the crucial period from conception throughout early childhood. These programmes deliver ECD services to woman, families and young children. Both case studies have invested in including parents in children’s learning as much as possible. Lynedoch Children’s House will host a series of parenting skills workshops that will cover a number of issues pertaining to children’s holistic development. GROW with Reaching Stars has started hosting information sessions for parents. This has started a dialogue and allowed the principal to seek innovative ways of teaching and how to be a beacon of hope in the community. According to UNESCO (2012) in a community with little or no income generation and poor access to resources, the need to capacitate the children’s primary care-givers is becoming increasingly apparent. Over and above parent’s meetings and workshops, there has been a move to use technology to include parents in children’s learning. One of the programmes is run by the Department of Social Development, named Care Up (DSD, 2017). This program gives caregivers learning activities they can do with their children and encourages story reading which leads to interaction and literacy development.

5.7 Trained practitioners/teachers

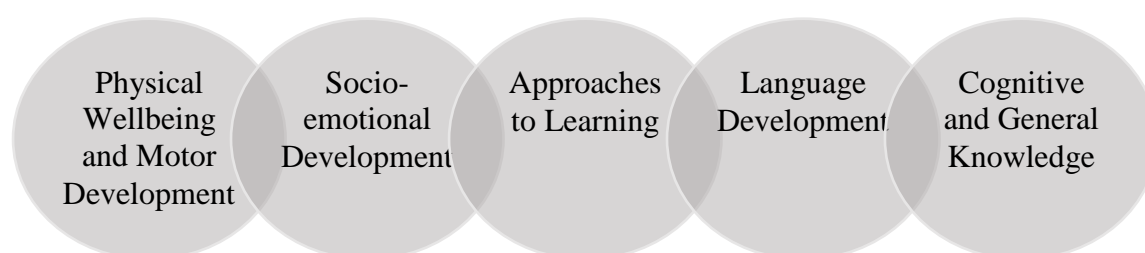
Furthermore, the importance of quality teachers/practitioners was emphasized. On her presentation on an ECD conference, Bruce (2017) felt *if quality does not happen in our schools, we are simply minding children*. She continued to emphasize that the NCF is a guide and therefore must be used as such and cease to be a burden as some perceived. Though the road to educational innovation is not easy, it is a powerful way to ever achieve peace on this planet and future generations should be educated in schools where everyone's needs are valued (Rosenberg, 2003:138). We are in need of a radical transformation, the problems in the world are a result of our doing as humans. One of the glaring issues in South African education is the lack of trained practitioners (Flynn, 2017). There is a huge need for improving the quality of schools and educators in South Africa. Beyond knowledge about educational pedagogies, at the heart of ESD are the value systems that educators carry. According to UNESCO (2012) report values are of utmost importance for our future and ensure that society can cope with challenges of the 21st century. These values can be fostered in early years. The values include a sense of responsibility, openness, trust and confidence enabling children to play an active role in their own life and society in terms of sustainable development.

5.8 School readiness

Laurie, Tarumi, McKeown and Hopkins (2016) argue that quality must be seen in light of how societies define the purpose of education. The basis of quality ECD program is its ability to prepare children for schooling. School readiness was one of the themes that emerged during the research process. Fitzpatrick (2014) contends that promoting school readiness in preschool presents one of the most efficient ways to decrease dropouts and the important social costs it engenders. The high school and primary school dropout can be traced back to lack of development of in the early years. One of the areas of contention where school readiness is concerned was that children are prepared for an environment that stifles their freedom, sitting in a row, listening to the teacher with little or minimal connection to nature. Although school readiness should be the driver in preparing children for life, scholars have found some flaws in the thinking. Inherent to the school readiness thinking is the idea that "if we can somehow make sure children are well prepared to learn by the time they

begin the first grade we can prevent them from falling behind and set them on a trajectory to academic success” (Fitzpatrick, 2014). Mtshengu (2017) stated that *‘my mandate as a teacher and a principal is to ensure that my students are ready for grade R in all aspects’*.

However, Bruce (2017) argues that learning is not a rush there are many other aspects/accounts that need to happen and ECD should begin at what children are capable of. Halle, Hair, Wandner and Chien (2012) explain that “school readiness often implies the mastery of certain skills or abilities that enable a child to function successfully both academically and socially in school settings”. The focus has been on children’s cognitive and literacy development, however, school readiness is multi-dimensional encompassing a myriad of development areas (Halle, Hair, Wandner and Chien, 2012). There are five development domains associated with early learning and development:



5.8.1 Access to quality ECD

Despite the growing recognition of the importance of ECD, a majority of South African children cannot access formal ECD provision and as a result are not exposed to quality early learning programmes before entering grade R (Atmore, 2013). This means a large number of students going into grade R are unprepared. In a meeting held by the BRIDGE network Flynn (2017) reported that *out of the 800 000 children under age 6 in Cape Town the Department of Social Development is only able to reach 15%*. The drive for school readiness continues to fall short of its objectives due to a high number of children that continue to miss quality pre-school. Biersteker et al (2016) reported that approximately 35% of children in South Africa attended a formal early childhood education facility or program in 2014. The sector of the population that is in need of quality support of early learning is least likely to access it. The Khayelitsha School is one of the schools in the area that is proactive in the quest for quality care. When asked about the hope for her school in Site C, Mtshengu (2017)

expressed that “she would like to see more quality ECD centres in Khayelitsha in order to retain a growing number of children leaving the community to study in the Northern and Southern suburbs of Cape Town”. Additionally, barriers to access have financial implications, as previously mentioned in chapter 1, most ECD centres are privately run. At times parents are unable to pay school fees and as such keep their children home, exacerbated by the general disregard for value of child development before school going age.

5.8.2 Pathways of learning

Schulschenk (2017) commented that the education system in South Africa fails children as it takes away their individuality and does not unlock the child potential. The challenge with education is the system that continues to treat people like they have the same strengths and abilities, and the old age fixation with uniformity. Mtshengu (2017) also emphasized the importance of school readiness and what that entails, which translates to writing and counting and an ability to sit and listen. In a nutshell preparing children for the schooling system that has failed this generation and most likely the next. There has been a movement towards finding new ways of teaching and engagement with children, and Lillard (2007) found why poor models stick. One of the reasons why alternative learning models are not easily taken up is because many education students rarely understand constructivism and thus fail to implement it well, and over time will fall back into the traditional method which provides them with comfort and familiarity (Lillard, 2007:12). Tobin, Boulmier, Zhu, Hancock and Muenning (2015) recognise there is a need for more research regarding successful educational methods and pedagogy for the disadvantaged populations.

5.9 Mentoring and support- the intervention

“People learn best from experience the education system will change when we change our ways of doing and being”

Bruce, 2017

Mentoring and continuous support is imperative, for personal development and for the purposes of monitoring and evaluation. Mentoring is a key feature in both cases, Lynedoch Children’s House mentoring is mostly done by the principal, while GROW

with Reaching Stars receive continuous support from educational mentors who form part of the social franchise that the school is part of. Mabeba (2017) the principal of Lynedoch Children's House believes that a *well-equipped teacher is a better teacher*, and therefore challenges her teachers to learn not only to teach, but to enrich their lives. We live in an ever changing and complex world with changes in policy pertaining to curriculum and other areas that impact the running of the school. Those with less access to information and services are left in the dark. The value of mentoring goes beyond taking care of the day-to-day business of running a school. There are different learning modalities that equally add value to children's development whatever the environment. The impact of teacher's attitudes was stressed in the previous chapter, and therefore continuous support moving towards preparing children to be responsible starts with upskilling teachers. According to Leavy and Hourigan (2015) teachers who have the opportunity to reflect on their practice are more open to new pedagogical practices and able to respond to teaching challenges and or take risks. The intervention and support can be offered in different forms, such as providing teacher training, school visits by the government and NGO's. Quality learning will take place when teachers are trained and can provide a learning environment in which a child can develop in a holistic manner, and to produce quality teachers various training and education opportunities are made available through ECD qualifications and short skills programmes (Atmore, 2013).

Furthermore, Montessori (1992:3) argues that children are not miniature adults they have a will and inner drive with which they are born. It is therefore the role of the adult to help children realise their potential. The starting point for a pedagogical approach that embraces the principles of sustainable development requires adults that embody such qualities. A process that will take a long time but necessary. According to the UNSDSN (2014) children are the common basis of sustainable development and no advances in SD will occur in coming decades without multiple generations contributing to societal improvement. Beyond it all children have a right to live in a sustainable world. For some, the debate around SD and care for environment means very little, the responsibility of caring for the environment is externalised. Mentoring and support is more than policing as some would perceive but as a source of checks and balance and also a growth path for individuals. There are no linear solutions to the problems facing the world particularly in the education space. The multiplicity of the pathways requires a macro and micro inspection. In order to achieve the sustainable development goals, the responsibility cannot be left in the hands of policy makers. There is a need for the mediators to go between

individuals or groups of people responsible for translating and dissimulation of information.

5.10 Community engagement- the value of collaboration

With the view of the past education system that disadvantaged a majority of South Africans, Schulschenk (2017) believes there is power in collaboration and community engagement. Research clearly shows the importance of collaboration on both local, national and international levels. Education for sustainable futures will be realised if different stakeholders who contribute to the education of the young child come together and imagine learning pathways that will ensure a better future in South Africa. The value of collaboration between the different stakeholders in the ECD space cannot be understated. The collaboration is seen at the BRIDGE meetings that are held in Cape Town with DSD, schools and NGO's, where collective challenges facing ECD can be addressed. Improving ECD services for South African children requires a collective commitment and coordinated effort. "There is a need for an integrated and multi sector national strategy to ensure proper allocation of resources, effective collaboration, referrals and management within the sector" (Van Niekerk et al, 2017). All those involved need to be intentional in their engagement, to walk across the room per say in order to learn and support one another.

According to Lo, Das and Horton (2016) ECD services should be provided holistically across all relevant sectors to enable young children to thrive, some countries have adopted multi-sectorial policies and are beginning to implement them. There is willingness and intent in South Africa, however, the services provided by the government leave little to be desired. The intended collaboration between government departments does not translate into practice. For instance, the process of Educare/crèche registration is tedious and costly putting at a disadvantage those who need help the most. It is the collective responsibility of the government, families, and other stakeholders that every child in the world is given the care they need (Lo et al, 2016). Furthermore, integration of care and education is recognised to be an indicator of quality education and recently integration has become more than making referrals but working closely with health care workers, and adult education (Biersteker et al, 2013)

5.11 Conclusion

In order to further narrate the observations from case studies, and to further address the questions on ECD for ESD, the impact of the learning environment, and how Montessori pedagogy embodies the principles of SD or EfS, this chapter briefly reflects on key overarching themes that were dominant in the research process. The first theme was a look at missed opportunities to make an impact on children's development while they are in their formative years. Research highlighted the negative socio-economic impact that lack of stimulation has in the later years. It was reported that the ECD sector is underfunded compared to primary school education, despite research on its significance. Secondly, the paper explored the missing theme of the NCF, the connection with people, animals and the environment. The shortfall of policy makers in this regard does not minimise the role of people in caring for the environment. Thus, practitioners and parents need to practice and teach children how to care for their environment. Quality education is the third theme and was one of the most covered topics in both cases studies. In spite of the contention as to what quality education means, the ten trans-global principles of quality brought some perspective to the debate. The fourth theme is school readiness. I explored what school readiness encapsulates. However, different scholars challenged the notion that school readiness is based on the child's cognitive and literacy development and that it goes beyond that and includes the child's social and emotional development or the development of a child as a whole. Furthermore, the fifth theme explored the value of mentoring and support, stating that the learning deficits and teacher attitude towards learning plays a huge role in how they teach and interact with the children. Therefore, some level of support from principals or outside is required in the South Africa contexts where ECD services have been seen merely as child minding for the longest time. The last theme explored the value of collaboration and community engagement. In order to provide quality education across the board there needs to be an engagement of minds, from parents to policy makers.

CHAPTER 6: CONCLUSIONS

6.1 Introduction

The previous chapter detailed the emerging themes of the research and how they impact education for young children. The aim of this chapter is to provide a conclusion on the literature reviewed and practical research. I will do this by reflecting on the Sustainable Development goals and their impact in driving SD agenda in early learning, and also reflect on the questions laid out in chapter one. This will be followed by a discussion on the recommendations for different stakeholders in the ECD space and opportunities for future research, and a chapter conclusion.

6.2 A reflection on sustainable development goals

Sustainable development goals are to ensure that every child has access to quality ECD in preparation for primary school and these learners must acquire the skills and knowledge to promote sustainable development. A substantial task at that but not impossible if small steps that are taken in form of changed values and beliefs system. The aim of this study was to explore a learning method that integrates ECD and SD and attempted to find if this is possible in practice. In relation to early learning and SD, SDG's set the objectives or provide a framework for achieving sustainability through tangible targets for short and long term of all forms of development including human development. During the SD module offered by the university, I realised even though adults today are capable of changing their behaviour in terms of how they consume and continue to deplete the planets resources. Webster (2013) argued that attending another tree planting ceremony will not help our cause but we need to be experts in managing the ecosystem and gardening the planet. It became clear that early learning is the best place to start with SD principles.

Reflecting on the Montessori Method and Nature deficit disorder, and the two case studies observed it seems clear that the role of a real connection with nature is key in providing children with empathy and care for the natural world. As the preceding section highlighted that biological, social and brain development should not be compartmentalised. Integrated in the Montessori teaching is love for nature. It is imperative to engage children in learning about the environment in order to ignite in them care for the planet. Since the enlightenment era young children and nature

have been discursively entangled (Lethoko, 2014). When children come into contact with nature their strength is revealed (Montessori, 1992). With the view of urban and rural settings that the case studies explored in the paper, children at the Khayelitsha school have no connection (access to forest or rivers) with the natural world and therefore need the adult initiative to find ways of allowing children to come into contact (parks or community gardens) with nature. Children have a concern for living beings it therefore interests them in taking care of plants and animals and nothing awakens foresight in a child such as this (Montessori, 1992).

Montessori (1992) wrote that education must become co-extensive with life and the central point of education must be the defence of life. At a Montessori school children engage in practical life activities that includes growing their own food and preparing it. The process of preparation of food and growing it is long and therefore encourages mindfulness in how children engage with activities. The quality of focused attention at the present moment speaks to the process of slowness in how things are done even later on in life. For instance, in the Khayelitsha school when a child was asked where carrots grow, his response was that “carrots grow in a shop”. The reality is that like the boy in Khayelitsha, a majority of children in South Africa grow in urban areas with no access to nature. The context and the place he finds himself in becomes his teacher, and no one could fault him for thinking the way he does. Learning that embodies SD is whereby teachers use concrete experiences to develop concepts defined in the curriculum rather than teaching concepts as abstract and removed from the world of a child. We need to challenge the old way of seeing things, understanding that the impossibility of reversing urbanization, the focus should therefore be on discussions on how to create opportunities to invest nature in everyday life inside an urban setting. There are three steps/levels that can be undertaken in order to expose children to the natural world in an urban setting.

Level 1- this step will be achieved through deliberate process of growing food and being intentional in the art even if it does not come naturally for teachers. This ties back to the learning and unlearning that teachers have to undergo where an education method adopts Montessori principles. The first step an intending Montessori teacher must take is to prepare herself (Montessori, 1992:343). Preparation involves learning about growing food and how that impacts children’s learning.

Level 2- the second step involves introducing and teaching children how to grow indoor plants. No matter how small the classroom, pot plants and growing seeds in a can is a possibility, helping a child experience growing plants. Having any type of garden creates exposure for children to nature how it works and how it contributes to everyday life. There are movements to support growing food, but when GROW with Reaching Stars received beans and all the implements to grow the beans, the activity never took place. Because the teachers saw no value in it and had no experience in growing anything themselves. In terms of outside space, lack of garden space is no longer a challenge as more and more people are coming with alternative solutions to physical deprivation. Vertical gardens the size of a door, tire garden ideas are some of the few ways that the schools can start experimenting with growing their own food. For the many this is a huge task as children like to pull the plants, and as such the process involves many more learning areas than just growing food, such as care and patience. It is vital to see the growing of plants and food not for the outcome of something to eat, but for the process of connection that this activity seems unfailingly to generate.

Level 3- this step speaks to the initiative that could be driven at a community level, the urban regeneration projects. Whether driven by ECD forums, local NGO's or individuals there is a need to develop green parks and community gardens that are accessible for children in a community like Khayelitsha, helping children connect with nature. Given the crime and violence community collaboration and engagements can be facilitated in order to create communities that put children first and keep them from harm through the use of police or community policing forums.

As a critical observation, the SDG's do not clearly articulate early learning and ecological connection. Where education is concerned there is no clear emphasis on the impact nor importance of learning that is environmentally conscious and addresses the nature disconnect that children today and in the future will experience as the world urbanises even further. The Montessori Method is inherently about connectedness to nature. Whether the school is not fully Montessori the steps above can be a start in making some way of connecting with nature.

6.3 QUESTION 1: what is it that makes a quality environment?

The conclusion to the question could be summarized by looking at the three consistent themes pertaining to creating a quality learning environment.

6.3.1 Physical space

The size of the classroom space has been highlighted as an important aspect of a school environment. The literature on environmental deprivation extensively covers the impact of the lack of space on children's development. An issue of environmental deprivation as referred to in chapter 3 was observed at the GROW with Reaching Stars. The children have no freedom to run and be free both inside and outside the classroom. The outside play area is a 5 by 2 meters that has to be managed by only taking a handful of children outside in rotation. The children at the Lynedoch Children's House are privileged as they exist in an environment that embraces deep connection with nature. Children are more deeply affected by their environment in formative ways, perhaps more than any other age group and we cannot think of a child as separate from his/her environment (Acar, 2013). Montessori education is about creating an environment that is suited for the child no matter the context. While the children attending the Lynedoch Children's House have many different experiences, being offered education with the explicit intention of seeking a connection with nature is pivotal. The Montessori Method was developed in the slums of Rome, as well as in rural India, and appears fitting for any environment as long as there is willingness to explore a different worldview from that conventionally punted as 'good education'.

Additionally, one of my objectives was to participate in infrastructural upgrade of Grow with Reaching Stars. The upgrades included painting and putting in windows and paving, which meant a complete transformation of how the children interact and appreciate the space. Even though the classroom size did not change, bigger windows completely transformed the space. It felt lighter and freeing. The larger windows make for transparent connections between the classrooms and the outside which creates a continued connection with the rest of the school and the community. The change in how children behaved was visible in the GROW school when the doors and windows were open, children's curiosity was stimulated as if their world opened little more. The Montessori Method has proven that learning that places the

child at the centre and caring for other living organisms can happen anywhere, in a slum or refugee centre. The thinking should be on finding alternative pathways and workable solutions which include the possibility to connect with nature in every context where children are learning.

Target 4a of the SDG's speaks into having environments that are inclusive and effective for children's development. Optimal learning environments inside and outside give children a sense of freedom and learning that involves all their senses and the knowing that when we care about the environment we care about ourselves. I conclude this section by the thoughts by Acar (2013), given the time children spend in schools throughout the year, school yards and classrooms should provide a space and environment that help him/her develop his hidden abilities unfolding the child's inborn powers (Montessori, 1992:2)

6.3.2 People

Parents play a pivotal part in the running of the school and ultimately the development of their children. For a long time, learning has been left in the hands of the teachers with little parental involvement. There has been a shift in that approach as we see more and more organisations pushing for parents to take part in their children learning, particularly those in previously disadvantaged communities. Parents have the greatest responsibility in preparing children for school and life. The NCF acknowledges the need for strong connections with adults, parents and families in their different forms play a central role in the overall development of a child. However, both schools struggle with getting parents full commitment. Both principals shared about the setbacks the children experience when they go on long school holidays or even when they are kept at home for few days. There needs to be a transformation in how parents see the necessity and value of early learning education. The transformation in the ECD space will happen when there is a collaborative effort between different stakeholders such as ECD forums, parents, NGO's, government and more come together with the sole mandate of putting a child at the centre in practice.

Furthermore, teachers in preschools are still the most undervalued and underpaid of the teaching profession. ECD forums call for a change in the structure of ECD employment. There is a drive to have teachers paid a decent salary and recognition

as teachers. The obvious sense of urgency and need to “catch children while they are young” has not translated in investment in the support and care of the adults/teachers that have such an enormous role in shaping the future leaders of the country. The challenge with teachers is twofold, one learning deficits as teachers do not have the competencies to impart learning needed by students (Dirks, 2013). In both cases the role of continuous learning for teachers is important. The teaching can be done in-house or in training workshops provided by community organisations. The process of unlearning, and then relearning by teachers should be the intention in order to transform the individuals which will in turn impact the way they interact and facilitate children’s development.

Parents and teachers play a fundamental part in providing quality ECD, however the thinking about SD in ECD seems to be taking a back foot especially in South Africa. Referring to the SDG’s inability to identify primary and secondary goals, the other visible challenges take precedence. The Lancet Series (2016) reported that “any agenda that aims to give young children the chance to both survive and thrive must ensure that ECD is prioritized in order to inform policy and programmatic implementation and achieve the SDG’s targets”.

6.3.3 Curriculum/site learning program

The method of learning is also a key factor in how practitioners/teachers care and educate children. The question that one could ask is perhaps is it worth continuing to do the bare minimum in the hope that something will be achieved or a difference made, perpetuating the “something is better than nothing mentality”. Which begs a question, how to move forward in providing solutions for early learning education in South Africa. The GROW with Educare Centres method was birthed out of a need to provide education solutions to communities that have little or no access to big spaces i.e. the environmentally deprived referred to in the previous section. Montessori education sees the child as a “messiah” capable of regenerating the human race and society. The child is not a blank slate needing to be filled by the knowledge of adults as conventional education appears to believe and act. The Montessori Method has been criticized for being too restrictive and limiting to a child’s imagination, while the GROW method was seen as being too prescriptive in its design. Both methods have distinct reasons for having chosen their methods. Montessori insists on grounding the child in his/her reality as his or her senses communicate, at a Montessori school

children start working with tangible concepts and later move to abstract (Duckworth, 2006). GROW method uses the abstract method of learning as an entry point to learning, and has a detailed prescriptive curriculum that is intended to serve as a guide or a starting point.

One of the three things that Bruce (2013) writes about on the trans-global principles for quality education is the child. Montessori guiding principles is following the child, this means allowing the child to take charge of their learning with little or no interference from adults. Quality learning program is one that awakens a love for learning in children. The Montessori vision was to create a stimulating environment in which a child was free to follow his or her imagination where a teacher was more a facilitator than an instructor. On the other hand, the GROW method is about offering a structured age appropriate curriculum that provides a solid foundation in all learning areas using a philosophy that inspires each child to reach their full potential (Growecd.co.za, 2017). Both programmes main philosophy is about putting the child first and how that is translated to practice differs considerably. The philosophy behind creating children-led classrooms and teaching has been under contention for a number of years, where Montessori method is being criticized for giving a child “too much freedom” while the conventional methods sustain the dominant, generally top-down role of the teacher in a classroom.

I conclude that learning can take place anywhere, it is not about stuff/resources. It is about resilience in adverse conditions, and an ability to imagine and find alternative solutions to the challenges we face. Children have an active imagination and are able to provide solutions to their/our problems if only they had the space for genuine creativity, as Montessori maintained over a century ago. On the other hand, while the prospect of embedding sustainability into the ECD sector is exciting research shows that educators often lack understanding, confidence and competence to embed sustainability across the curriculum (Deyment et al, 2014). Reflected in the NCF the framework for early learning in South African, Le Blanc (2015) is optimistic as he believes that SDG's will serve as guidepost for a difficult transition to SD which has eluded international community since the Earth Summit in 1992.

6.4 QUESTION 2: explore the role of the physical (indoor and outdoor) environment in children's development?

This study attempted to show the impact of having access to quality environment and the lack thereof. The negative impact of lack of ED ranges from physical development challenges, disconnect from nature and issues with health.

6.4.1 Nature Deficit Disorder

A majority of urban children have less access to nature than ever before, and therefore as a way forward alternatives need to be found to provide this connection. The high rate of urbanisation indicates that more people live in cities than rural areas. This however does not change the human inborn desire to connect with nature. The world is becoming urban at a fast pace with an increasing majority of people living in cities with little opportunity to be in nature. The implications for this major change are intriguing which might mean we have reached the end of our separate evolution what Human evolution is no longer separate from the technological advances, we may be facing a time where the next set of changes that happen in the human body are technologically driven. Lovelock, 2014). We live in the world that is modernized, in skyscrapers and age of technology. The urban setting is not without its challenges such as crime, litter, waste, pollution, dumping and many more. The lack of opportunities to access nature means the teachers and principals have to be conscious of this need and therefore make provisions to expose children to nature. Evidence suggests that a connection with nature at a younger age will ensure that we have adults that are stewards for environmental protection. Education can exert influence on children and therefore could be designed with not only the economic benefits but care for the environment and other living beings.

The Lynedoch Children's House exists in close proximity to nature and children have the freedom to walk and play in the gardens, and experience growing their own food. GROW with Reaching Stars is a typical example of an urban school in a poor community as laid out in chapter 4. The high rate of crime in Khayelitsha means that children are not to be allowed outside the gates even with supervision unless they are going to the park, that is seldom looked after and not always favourable for the teachers who are vulnerable to being robbed and, more recently, gang violence. An independent study done on children's development showed the deficit in their gross

motor development. There are no trees to climb, the available parks are not looked after and the school does not have enough land to install a playground. The driving force behind the SD debate is care for the environment (Selby, 2006). Children should be at the centre of environmental awareness as the Kenyan proverb stated that we borrow the earth from our children, and should therefore should return it in a good state and if we fail to do so provide children with tools and opportunities to survive.

The Khayelitsha case study may look miserable in terms of their inability to provide quality outside play for children. However, there are many other ways of achieving children's physical development if the ideal is not available. The school has access to resources they can use to recreate an environment that allows children to use their muscles and be actively involved in their play time. The key lies in challenging the principals and teachers alike to come up with solutions. It is when we realise that there are different ways of being and doing that we will be able to come out of the passive mentality that seems to have so easily entangled education in South Africa.

6.5 QUESTION 3: whether the Montessori Method makes sustainable development explicit in early childhood development?

My conclusion to this question was that Montessori education does make SD explicit and its very design is aligned to the principles of SD. I note that there are two key aspects (order in environment and mind, learning in context) in the Montessori education method that links with SD.

6.5.1 Order in environment and mind

At heart of the SD debate is putting things back (meeting today's needs without compromising the future generation's needs), thinking/process (what is to be developed?) and maintenance of resources (what is to be sustained). The children in Montessori schools are free but that does not mean there is no structure, structure is in fact vital if the children are to be free to work. In a Montessori school a child is seen a doer and adept in driving his or her own learning. Additionally, the idea of a child being a 'messiah' capable of regenerating the human race is a phenomenon many struggle to comprehend. One of the Montessori guiding principles is order, and putting things back when a child is done working with an activity. This is not done by

simply packing up but with precision and care, where a child picks one item at a time and put it back so that the next person is able to use it. This method fosters care and mindfulness of the next person's needs. Care for the environment, outdoor and indoor, are core values that underpin an education system rooted in care and responsibility.

Furthermore, Clark (2014) argues that we can begin to introduce systems thinking in the early years as they are the most critical in developing intellectual capabilities that children will need in the adult life. Such thinking is pivotal in answering the questions such as: what alternative development pathways do we have to sustain us, and which would address the many environmental challenges we face today. Montessori engages children in value based learning that focusses on respect for others, environment and all other living beings. It may be timely that we are growing aware through environmental change and global warming, that the familiar oxidizing world we now enjoy may not have tenure (Lovelock, 2014). The realisation that the planet will not forever provide us with what we need necessitates an education that drives the agenda in order to properly prepare the future generations for the environmental, economic and at social upsets they will face.

The question of what is to be sustained in the environmental debate is addressed in the Montessori Method, however miniscule it may seem. Care for the environment, which ranges from careful planning and preparation by teachers/directors, putting things back means that resources at a school have a longer life span. There is no drive for consumerism and buying new items every term, the use of recycled materials and easily available affordable materials is ordinary at the Montessori school. When asking the question, what is to be sustained the answer lies in the context and the region and therefore requires a shift from the first world domination in terms of driving SD principles. What available resources do we have that need to be sustained in order to ensure that the future generation's needs are not compromised? Water quality and shortages, food security deforestation, and species loss are some of the complex challenges that demand a shared commitment to education that empowers people for change (Dyment, Davis, Nailon, Emery & Getenet et al, 2014)

6.5.2 Learning in context

Meaningful contexts and experiences are connected to one's daily life and they feel important, education is not separate from biological and social life. Montessori education is designed to provide meaningful contexts (Lillard, 2007:224). Elliot (2006) found the value in the capacity for citizens to identify their local problems or concerns and driving community based initiatives for solutions. In the same breath the Montessori Method involves going into a classroom and into the world to learn. Part of sustainability is about learning about cyclical processes, waste materials becoming an input to the production of other goods. Developing localised economies to issues and challenges facing different regions aids in cutting down on huge external costs of production such as transport and energy use. Given the education method it is plausible to conclude that children at a Montessori school are made aware of their role in maintaining order and balance and taking care of their immediate environment and ultimately the world. These value systems do not occur overnight; they get instilled over a long period of time. The separation of waste, recycling, water saving, growing food (food gardens) at Lynedoch Children's House are some of the examples that reflects the methods alignment to SD.

6.6 QUESTION 4: explore the impact of a learning environment that embodies the Montessori principles.

In answering the question, I came to two conclusions the education that embodies Montessori principles gives a child freedom within limits and provides adults a process of learning and unlearning.

6.6.1 Freedom within limits

There is perceived notion that Montessori allows the child to run wild, however this is not the case. Children have a choice to choose activities they want to do but this happens with order, consequence and responsibility. Life is based on choice, so they learn to make their own decisions and cannot learn through obedience to the command of another (Lillard, 2007:80). The concept of freedom within limits is difficult to comprehend particularly for those that come from traditional command based education. At the GROW school I introduced the "do not do for the child what they can do for themselves" thinking and I can safely say the idea has not taken

ground. When children are given opportunity to choose it ignites their love for learning. They become fulfilled in knowing they are capable and therefore need less external rewards to validate their self-worth. The freedom also speaks to learning at one's own pace. The idea of mass produced learning has been proven ineffective for generations and why it is in continued use is a question difficult to answer.

The Montessori Method is aligned with human's innermost desire to find their purpose and feeling empowered. Moving deliberately away from command based education towards helping a child become the best of him/herself perhaps finally the answers to what it means to be human.

6.6.2 Unlearning and learning

Learning environment that embodies Montessori principles means a transformation of an adult. Conventional methods of education seldom appear to contribute in the provision of education that enables a child to be a better citizen, able to be and act in ways appropriate to the challenges within the Anthropocene. The Montessori Method continues to challenge those who embrace these methods. Rote learning, and assuming learning in children only happens through the expertise of adults erroneously appears easier. It rests in notion of control over children, and for a person who was raised in this same way it can be difficult to make a change, and it takes years of practice for those who decide to shift deeply formed patterns in such learning. Erasmus (2017) testified to the fact, as she shared that Montessori Method for those encountering it as adults requires a mental shift in how we view education. A process of unlearning the thought processes and views of what makes for quality teacher and child interactions are drastically challenged in Montessori education. A tiny example, in addressing children in low tones that feels like whispering for those who are used to louder being better.

“When you cut it for me, write for me, open it for me, set it for me, draw it for me or find it for me, all I learn is that you do it better than me” Unknown

6.7 Recommendations (for both case studies, NGOS, and government)

6.7.1 Investment in ECD

Economic research shows that there is value in proper investment in early learning. The use of the word proper in this case refers to the intentional provisioning of funds and support. What I found during the research process is that, there are those children who receive a holistic program, and then those who receive a 'splash', or some semblance of quality and those who continue to be left in the dark. It appears that the current system is accustomed to providing fragments and the hope that something is better than nothing, and therefore the child might turn out alright. For instance, where funds are concerned DSD Cape Town reaches about 15% of the children and the schools that need their help seldom get the resources they provide. This means teachers continue being underpaid, and leave their jobs for better opportunities. This not only has implications on the rands and cents that the government or parents does not pay or cannot afford to pay, but affects children who constantly have to be upset by the change in adults/teachers that take care of them.

Furthermore, training and support are some of the key issues regarding the provision of quality education in South Africa. Teachers need consistent support, monitoring and evaluation particularly with the ever changing rules and regulations imposed by the government bodies on the Educare Centres. Teacher training is important but qualifications alone do not necessarily make a difference. Oversight and support from relevant department and facilities is key. Recently the City of Cape Town assigned regions to different NGO's to help with the registration and monitoring of ECD centres. Whether this will assist with the confusion, bureaucracy and change that continues to define this department is yet to be seen.

6.7.2 Parental involvement

The role of parental involvement in both case studies is an important feature in providing quality care for the children. The principals voiced concerned about parents' commitment in working together with the school in educating the child. There have been different attempts by local organisations and DSD to involve parents and encourage them to interact with their children in ways that helps them develop in many areas such as language and mathematics. Over the past two years I have

attempted to host a one or two parenting skills workshops with the Khayelitsha School without success. I may not have answers in terms of how this challenge can be addressed but it remains a huge gap that needs a solution. Studies show that a quality parent-child-teacher interaction plays a critical role in children's development.

6.7.3 Curriculum design

A key place of influential intervention is the design of the curriculum. On the 1st of July 2014 I sat at a meeting with principals from seventeen educare/preschools from Cape Town who are part of GROW educare centres. One of the areas of contention was the curriculum design and which one is best and why. I applaud innovation and ability to compare, learn and choose the best method to use for one's school. However, for people who barely understand the previous curriculum with its demands and changes it is proven challenging to deal with the constant changes. It is clear that these changes are seldom translated to real learning. Not that I am advocating for a monopoly over site learning programmes. As a guide the NCF and NELDS have been instrumental in guiding the different site learning programmes utilised in ECD centres across Cape Town. I believe the ECD curriculum design requires key fundamental principles that do not change with the new policy and continue to underlie how ECD is enacted in the future.

6.7.4 Place based learning

An understanding of each context and how it impacts learning is vital in providing quality education. One of the challenges of the school in Khayelitsha was that the teachers were constantly looking outside for better education and "stuff". This meant limiting their ability to look within their community for opportunities and solutions. Quality learning is one that takes context into account and challenges children and adults alike to discovery new ways of being and learning. The Montessori Method was birthed in a slum which means that humans are capable of learning and thriving in adversity. Given the amount of time children spend in the schools it is just to provide them with rich and deep experiences that will help shape their lives.

6.8 Suggestions for further research

Due to time and scope limitations there are areas of research that were not examined in detail for this study. The following four areas are an opportunity for further research and highlight the need for an intervention that provides holistic solutions to the ECD challenge in South Africa.

6.8.1 Finance

The previous section raised the value of proper investment in ECD. The opportunity for research lies in looking at the finance models that would address the financial implications of running an ECD centre. How would government and NGO's best support this need? What are alternative solutions in terms of cutting costs of running the school? A majority of ECD centres are home based which means parents carry the responsibility of paying the fees. The research in the financial implication would require an in-depth understanding of parent's affordability and what that entails.

6.8.2 Food/nutrition

Food constitutes a large portion of what takes place in the preschool, children eat at least 4 times a day, breakfast, midmorning snack, lunch and afternoon snack. Food preparation, and the type of food being eaten makes a world of difference in terms of how the children engage in class. There are schools that serve unhealthy food for many reasons that include cost and perception. The research could delve into food insecurity we face as a country, and the type of food that is easily available and affordable. Also investigate health issues stemming from food choices that continue to cost the country billions of Rands.

6.8.3 Role of technology

There is room to explore the role and impact of technology on young children's development. Today children are able to use technological devices before they are able to utter their first word. A crying child stops when a tablet or smart phone is placed on their hands. The reality is that we live in a technologically advanced world and we cannot escape this reality. We therefore need to find a balance in how these devices function in the children's lives, the negative impacts have been identified but

that has not stopped people from exposing children to the devices. In honesty, for a teacher who is struggling to manage a class, running low on resources and does not have the skills to adapt and be creative, turning on a television for children to watch is the next best thing. Research in this area could look at awareness and alternative ways of engaging with technology.

6.8.4 Role of nature in ECD

Even though I asked a question on the role of physical environment in children development. I believe there is scope for exploring the value of connection and/or contact with nature. The Khayelitsha case study represents education environments experienced by South African children. There is no intensive research done in the South Africa to detail the impact of living in environmentally deprived communities. The research could be done over a longer period of time tracking changes in values and attitudes when teachers in spaces like Khayelitsha School are challenged to find alternative solutions to their problems.

6.9 Chapter conclusion

This chapter provided a conclusion to the study by using the four questions asked in Chapter 1, in the context of the SDG's. The first question on quality education concluded that physical space, people and site learning program or curriculum are at the heart of quality education provision. The second question on the role of physical environment concurred with Louv's take on the importance of contact with nature, stating that any contact is important to help children take better care of their environment. The third question on whether Montessori Method makes SD explicit in ECD concluded by looking at the two key principles of Montessori that are aligned with SD, order in environment and mind, and learning in context. The fourth question on what might a method that embodies Montessori principles look like, the response was that such an environment provides children freedom within limits and allows teachers to learn new things and unlearn things that do not help a child realise their full potential. Additionally, I explored whether the Montessori as an early learning method integrates the principles of SD. The connection to nature was identified as one of the key principles of Montessori that aligns with SD and continued to provide solutions in urban settings where the connection is not possible. I provided

recommendations for different stakeholders but not limited to and lastly gave suggestions for further research in the ECD and SD field of study.

APPENDICES

APPENDIX A- interviews at the Lynedoch Montessori house and GROW with Reaching Stars

APPENDIX B - Selected quotes from the Lynedoch Eco Village and Khayelitsha Site C case study

APPENDIX C – Selected images of LYNEDOCH ECOVILLAGE and GROW school in Khayelitsha

APPENDIX A: Interviews at the Lynedoch Children's House and GROW with Reaching Stars

Name	Role	Interview type	Date of interview
Jess Schulschenk	Director at The Sustainability Institute	Structured	25 May 2017
Naledi Mabeba	Principal at Lynedoch Montessori House	Semi-Structured	25 May 2017
Colleen Erasmus	Facilitator at Lynedoch Montessori House	Structured	25 May 2017
Latishia Abrahams	Teacher at GROW with Reaching Stars	Semi-Structured	17 May 2017
Grace Mtshengu	Principal at GROW with Reaching Stars	Structured	17 May 2017
Joyce Cwayi	Principal at GROW with Ulutho Educare	Semi-structured	1 July 2017
Claire	Early Inspiration Trainer	Semi-structured	12 April 2017
Lisa Voortman	Project Manager at Grow with Educare Centres	Semi-structured	Ongoing

APPENDIX B: Selected quotes from the Lynedoch Eco Village and Khayelitsha Site C case study

Latishia Abrahams (Teacher)

“Quality school does not exist in Khayelitsha, there is no garden and enough space for children to play”

Grace Mtshengu (Principal)

“Providing quality education in Khayelitsha is possible, however in order to achieve the Southern suburbs we need to upgrade our schools”

“What defines quality education is a curriculum with a difference”

Colleen Erasmus (Teacher)

“People are generally happy with what they do not know and therefore we need to be intentional in how we educate”

“Whatever you model to children from 0-3 is what they will perceive as right and how things should be”

Naledi Mabeba (Principal)

“the teachers need to perfect the art of being in nature”

Jess (Director of Sustainability Institute)

“I will sing myself to the longing”

Lisa Voortman

“People in disadvantaged communities have always had limited options, therefore need to aspire for something better”

Appendix C: Selected images of The Lynedoch Eco Village and Site C



Images of the outside play area at GROW with Reaching Stars- Khayelitsha



Images of outside areas of Lynedoch children's House- Lynedoch Eco Village

REFERENCES

- Abrahams, L. 2017. Personal Interview. 17 May 2017
- Acar H. 2013. Learning Environments for Children in Outdoor Spaces. *Procedia - Social and Behavioral Sciences*. 141:846–853.
- Apple, W.M. 2014. *Official Knowledge: Democratic Education in a Conservative Age* - Michael W. Apple - Google Books. [Online], Available: [https://books.google.co.za/books?hl=en&lr=&id=gz4sAwAAQBAJ&oi=fnd&pg=PP1&dq=apple+2014+democratic+society+and+education&ots=eiBHhiuWki&sig=ClfN5EqdYxIXwYiK8egc8KVab7c#v=onepage&q=apple 2014 democratic society and education&f=false](https://books.google.co.za/books?hl=en&lr=&id=gz4sAwAAQBAJ&oi=fnd&pg=PP1&dq=apple+2014+democratic+society+and+education&ots=eiBHhiuWki&sig=ClfN5EqdYxIXwYiK8egc8KVab7c#v=onepage&q=apple+2014+democratic+society+and+education&f=false) [2017, October 25].
- Asah, S.T. 2015. Post-2015 Development Agenda: Human Agency and the Inoperability of the Sustainable Development Architecture. *Journal of Human Development and Capabilities*. 16(4):631–636.
- Atmore, E., Van Niekerk, L. & Ashley-Cooper, M. 2012. Challenges facing the early childhood development sector in South Africa. *South African Journal of Childhood Education*.
- Atmore, E. 2013. Early childhood development in South Africa – progress since the end of apartheid. *International Journal of Early Years Education*.
- Aubrey, C. 2017. Sources of inequality in South African early child development services. *South African Journal of Childhood Education*. 7(1):9.
- Baligadoo, P.D. 2014. Peace Profile: Maria Montessori—Peace through Education. *Peace Review*. 26(3):427–433.
- Barad, D., Kate Dicken, M., Hitzemann, R., Riccio, E. & Struzenberg Senior Symposium – Gordon, E. n.d. *Overview of the Problem*. [Online], Available: http://www.spokaneudistrict.org/uploads/publication/files/object/GU-UDEA_Community_White_Paper_Proposal.pdf [2017, October 25].
- Barrett, A & Broesch, B. 2012. *Prepared Social Learning about Dangerous Animals in Children*. *Evolution and Human Behaviour* 33 (2012) 499-508
- Bengtsson, M. 2016. *How to Plan and Perform a Qualitative Study Using Content Analysis*. Nursing Plus Open.

Bhatia, P., Davis, A. & Shamas-Brandt, E. 2015. Educational Gymnastics: The Effectiveness of Montessori Practical Life Activities in Developing Fine Motor Skills in Kindergartners. *Early Education and Development*. 26(4):594–607.

Biersteker L, Dawes A, Hendricks C & Tredoux D. 2016. Centre-based Early Childhood Care and Education Program Quality: A South African Study. *Early Childhood Research Quarterly* 36 (2016)334-344.

Blaxter, L., Hughes, C. & Tight, M. 2002. *How to Research*. Open University Press. [Online]:<https://books.google.co.za/books?id=TwVIQgAACAAJ&dq=blaxter+2001&hl=en&sa=X&ved=0ahUKEwjD65j7gfDWAhXjCMAKHWEeDfsQ6AEIMTAC> [2017, October 14].

Blewitt, J. 2008. *Understanding Sustainable Development*. London: Earthscan. 1-2

Olusanya, B.O. 2011. Highlights of the new WHO Report on Newborn and Infant Hearing Screening and implications for developing countries. *International Journal of Pediatric Otorhinolaryngology*. 75(6):745–748.

Bolis, I., Morioka, S.N. & Sznclwar, L.I. 2017. Are we making decisions in a sustainable way? A comprehensive literature review about rationalities for sustainable development. *Journal of Cleaner Production*. Elsevier. Vol 145:310-322

Bonal, X. & Fontdevila, C. 2017. Is Education for Sustainable Development the means to bring about inclusive development? Between idealist and alternative positions. *Current Opinion in Environmental Sustainability*. 24:73–77.

Bozalek, V., Leibowitz, B., Carolissen, R. & Boler, M. n.d. *Discerning critical hope in educational practices*. [Online], Available: https://books.google.co.za/books?id=tUxJAgAAQBAJ&dq=bolter+2014+this+millennia+point+in+history,+questions+cynicism+and+despair+and+hope+arises+at+every+turn,+especially+in+the+struggle+for+transformation+in+education.&lr=&source=gbs_navlinks_s [2017, October 25].

Britto, P.R. & Sherr, L. 2016. A road less travelled: early childhood evidence to investment. *Vulnerable Children and Youth Studies*. 11(3):193–210.

Bruce Tina. 2015. *Early Childhood Education 5th Edition - Tina Bruce - Google Books*. [Online], Available: <https://books.google.co.za/books?id=NbQnCgAAQBAJ&printsec=frontcover&dq=Tina+Bruce+on+education&hl=en&sa=X&ved=0ahUKEwib7tz2->

lvXAhUCPxQKHUEhCIUQ6AEIJjAA#v=onepage&q=Tina Bruce on education&f=false [2017, October 25].

Brunn, S.D. & Wilson, M.W. 2013. Cape Town's million plus black township of Khayelitsha: Terrae incognitae and the geographies and cartographies of silence. *Habitat International*. 39:284–294.

Budget Review 2017 National Treasury Republic of South Africa. 2017. [Online], Available: <http://www.treasury.gov.za/documents/nationalbudget/2017/review/FullBR.pdf> [2017, October 14].

Cars, M. & West, E.E. 2015. Education for sustainable society: attainments and good practices in Sweden during the United Nations Decade for Education for Sustainable Development (UNDESD). *Environment, Development and Sustainability*. 17(1):1–21.

Casper, V. & Lamb-Parker, F. 2012. Community-based learning to support South African early group care. *Early Years*. 32(2):183–199.

Castellano, J., Ribera, A. & Ciurana, J. 2016. Integrated system approach to evaluate social, environmental and economic impacts of buildings for users of housings. *Energy and Buildings*. 123:106–118.

Charles, C. 2009. The Ecology of Hope: Natural Guides to Building a Children and Nature Movement. *Journal of Science Education and Technology*. 18(6):467–475.

Clark, L. 2014. *Systems Thinking: Promoting Critical Thinking In the Early Years - P21*. [Online], Available: <http://www.p21.org/news-events/p21blog/1434-systems-thinking-promoting-critical-thinking-in-the-early-years> [2017, October 25].

The Cloud Nine Institute for Sustainable Education. 2018/ [Online], available: <https://cloudinstitute.org/brief-history/> Accessed [2018 February 11]

Conway, M. 2012. Sustainable Futures: What higher education has to offer? *Social Alternatives*.

Cossentino, J. M. (2006). Big work: Goodness, vocation, and engagement in the Montessori Method. *Curriculum Inquiry* 36(1), 63–92.

Costanza, R., De Groot, R., Sutton, P., Van Der Ploeg, S., Anderson, S.J., Kubiszewski, I., Farber, S. & Turner, R.K. 2014. Changes in the global value of ecosystem services. *Global Environmental Change*. 26:152–158.

- Costanza, R., Fioramonti, L. & Kubiszewski, I. 2016. The UN Sustainable Development Goals and the dynamics of well-being. *Frontiers in Ecology and the Environment*. 14(2):59–59.
- Cwayi, J. 2017. Personal Interview. 1 July 2017
- Daelmans, B., Darmstadt, G.L., Lombardi, J., Black, M.M., Britto, P.R., Lye, S., Dua, T., Bhutta, Z.A., et al. 2017. Early childhood development: the foundation of sustainable development. *The Lancet*. 389(10064):9–11.
- David Bryan Zandvliet. 2014. PLACES and SPACES: Case studies in the evaluation of post-secondary, place-based learning environments. *Studies in Educational Evaluation*. 41:18–28.
- Davis, B.G. 2009. *Tools for Teaching*. John Wiley & Sons. [Online], Available: https://books.google.co.za/books?id=VuWN_tnazNkC&dq=davis+2009&lr=&source=gb_s_navlinks_s [2017, October 14].
- Devine, C. 2017 Personal Interview. 12 April 2017
- Dirks, N. 2013. *The Challenges of South Africa's Education System - Dreams to Reality*. [Online], Available: <http://www.dreamstoreality.co.za/the-challenges-of-south-africas-education-system/> [2017, October 25].
- Dowling, T.J. 2007. Sustainable development in water and sanitation: A case study of the water and sanitation system at the Lynedoch Ecovillage Development. [Online], Available: <http://scholar.sun.ac.za/handle/10019.1/3443> [2017, October 25].
- Dua, T., Tomlinson, M., Tablante, E., Britto, P., Yousfzai, A., Daelmans, B. & Darmstadt, G.L. 2016. Global research priorities to accelerate early child development in the sustainable development era. *The Lancet Global Health*. 4(12):e887–e889.
- Duckworth, C. 2006. Teaching peace: a dialogue on the Montessori Method. *Journal of Peace Education*. 3(1):39–53.
- Dunst, C.J., Bruder, M.B. & Espe-Sherwindt, M. 2014. Family Capacity-Building in Early Childhood Intervention: Do Context and Setting Matter? *School Community Journal*. 24(1). [Online], Available: <https://search.proquest.com/docview/1537950570/fulltextPDF/60E09D1CED3F4F0C/PQ/1?accountid=14049> [2017, October 15].

- Dyment, J.E., Davis, J.M., Nailon, D., Emery, S., Getenet, S., McCrea, N. & Hill, A. 2014. The impact of professional development on early childhood educators' confidence, understanding and knowledge of education for sustainability. *Environmental Education Research*. 20(5):660–679.
- Ebrahim, H. 2011. Children as agents in early childhood education. *Education as Change*. 15(1):121–131.
- Ebrahim, H.B., Killian, B. & Rule, P. 2011. Practices of early childhood development practitioners for poor and vulnerable children from birth to four years in South Africa. *Early Child Development and Care*. 181(3):387–396.
- Education and inequality in South Africa: Returns to schooling in the post-apartheid era. 2016. *International Journal of Educational Development*. 46:43–52.
- Elkind, D. 1967. Piaget and Montessori. *Harvard Educational Review*. 37(4):535–545.
- Elliott, A. n.d. Early Childhood Education : Pathways to quality and equity for all children. [Online], Available: <http://research.acer.edu.au/cgi/viewcontent.cgi?article=1003&context=aer> [2017, October 14].
- Endenburg, N. & van Lith, H.A. 2011. The influence of animals on the development of children. *The Veterinary Journal*. 190(2):208–214.
- Eneh. n.d. Eneh AN - Education for Sustainable Dev.13.
- Erasmus, C. 2017. Personal Interview. 25 May 2017
- Essential Elements of Sustainability in Teacher Education* « *Journal of Sustainability Education*. n.d. [Online], Available: http://www.jsedimensions.org/wordpress/content/essential-elements-of-sustainability-in-teacher-education_2014_06/ [2017, October 14].
- Evans, G.W. 2006. Child Development and the Physical Environment. *Annual Review of Psychology*. 57(1):423–451.
- Filho, W.L. & Verlag Der Wissenschaften, I. n.d. World Trends in Education for Sustainable Development. [Online], Available: <http://www.peterlang.de/index.cfm?cid=5> [2017, October 14].
- Fisher, P.B. & McAdams, E. 2015. Gaps in sustainability education. *International Journal of Sustainability in Higher Education*. 16(4):407–423.

- Fitzpatrick Caroline. 2014. South African journal of childhood education. *South African Journal of Childhood Education*. 4(1):156–166. [Online], Available: http://www.scielo.org.za/scielo.php?pid=S2223-76822014000100010&script=sci_arttext&tlng=pt [2017, October 25].
- Fletcher, R. 2015. Nature is a nice place to save but I wouldn't want to live there: environmental education and the ecotourist gaze. *Environmental Education Research*.
- Fletcher, R. 2017. Connection with nature is an oxymoron: A political ecology of "nature-deficit disorder". *The Journal of Environmental Education*. 48(4):226–233.
- Flick, U., Metzler, K. & Scott, W. n.d. *The SAGE handbook of qualitative data analysis*. [Online], Available: https://books.google.co.za/books?id=R-6GAwAAQBAJ&dq=Schreier+2014&source=gbs_navlinks_s [2017, October 14].
- Flynn, K. 2017. Workshop on ECD community of Practice. 13 June 2017
- Fulghum, R. (1989). All that I need to know I learnt in day care]. Stockholm: Bonnier.
- Gadotti, M. n.d. EDUCATION FOR SUSTAINABILITY A critical contribution to the Decade of Education for Sustainable Development. [Online], Available: http://gadotti.org.br:8080/xmlui/bitstream/handle/123456789/420/AMG_PUB_01_006.pdf?sequence=2&isAllowed=y [2017, October 14].
- Goduka, I. 1997. Rethinking the Status of Early Childhood Care and Education (ECCE) in Rural and Urban Areas of South Africa. *Early Education & Development*. 8(3):307–321.
- Gray, C. & MacBlain, S. n.d. *Learning theories in childhood*. [Online], Available: https://books.google.co.za/books?id=6vulCwAAQBAJ&dq=gray+and+macblain+2015&lr=&source=gbs_navlinks_s [2017, October 14].
- Gregers Eriksen, K. 2013. Why education for sustainable development needs early childhood education: the case of norway. *Journal of teacher education for sustainability*. 15(1):107–120.
- Grossen, S., Grobler, A.A. & Lacante, M. 2017. Repeated retention or dropout? Disputing Hobson's choice in South African township schools. *South African Journal of Education*. 37(11).
- Grow with Educare centres, 2017 [online] available at <http://www.growecd.co.za/> (July 2017)

- Haas, T.C. & Ferreira, S.M. 2016. Combating Rhino Horn Trafficking: The Need to Disrupt Criminal Networks. *PLOS ONE*. 11(11): e0167040.
- Halle, T.G., Hair, E.C., Wandner, L.D. & Chien, N.C. 2012. Profiles of school readiness among four-year-old Head Start children. *Early Childhood Research Quarterly*.
- Hall, K., Sambu, W., Berry, L., Giese, S., Almeleh, C., & Rosa, S. 2016. South African Early Childhood Review 2016. Cape Town: Children's Institute, University of Cape Town and Ilifa Labantwana.
- Hellberg, S. & Knutsson, B. 2016. Sustaining the life-chance divide? Education for sustainable development and the global biopolitical regime. *Critical Studies in Education*.
- Holden, E., Linnerud, K. & Banister, D. 2016. The Imperatives of Sustainable Development. *Sustainable Development*. 25(3):213–226.
- Holmes, C. 2016. The introduction of Montessori teaching and learning practices in an early childhood classroom in a remote Indigenous school. *Theses*. (January, 1). [Online], Available: <http://researchonline.nd.edu.au/theses/136> [2017, October 25].
- Hopkins, C.A. & McKeown, R. 1999, "Education for sustainable development", *Forum for Applied Research and Public Policy*, vol. 14, no. 4, pp. 25-29.
- Hopwood, B., Mellor, M., O'Brien, G. 2005. Sustainable Development: Mapping Different Approaches. *Sustainable Development*. 13: 38-52.
- Ilifa Labantwana, I. 2012. Building local ECD knowledge: evidence from the sobambisana initiative. [Online], available: <http://ilifalabantwana.co.za/wp-content/uploads/2017/06/building-local-eed-knowledge.pdf> [2017, october 25].
- Illeris, K. 2007. What Do We Actually Mean by Experiential Learning? *Human Resource Development Review*. 6(1):84–95.
- Investing in the foundation of sustainable development: pathways to scale up for early childhood development. 2017. *The Lancet*. 389(10064):103–118.
- Investing in the foundation of sustainable development: pathways to scale up for early childhood development. 2017. *The Lancet*. 389(10064):103–118.
- Jeon, L., Hur, E. H., & Buettner, C. K., 2016, "Child-care chaos and teachers' responsiveness: The mediating role of teachers' emotion regulation and coping.." *Journal of School Psychology* 59, 83 - 96.

- Kallen, L. 1993. The Montessori approach. *EBSCO HOST CONNECTION*. [Online], Available: <http://connection.ebscohost.com/c/articles/9402235164/montessori-approach> [2017, October 25].
- Kaplan, S. 2017. Contemporary Disengagement from Antiretroviral Therapy in Khayelitsha, South Africa. *Yale Medicine Thesis Digital Library*. (January, 1). [Online], Available: <http://elischolar.library.yale.edu/ymtdl/2134> [2017, October 25].
- Kayili, Gokhan, Ari, R. 2014. Examination of the Effects of the Montessori Method on Preschool Children's Readiness to Primary Education *. *Educational Sciences: Theory and Practice*. [Online], Available: <http://files.eric.ed.gov/fulltext/EJ962690.pdf> [2017, October 14].
- Kopnina, H. & Meijers, F. 2014. Education for sustainable development (ESD). *International Journal of Sustainability in Higher Education*. 15(2):188–207.
- Kopnina, H. 2012. Education for sustainable development (ESD): the turn away from “environment” in environmental education? *Environmental Education Research*. 18(5):699–717.
- Laurie, R., Nonoyama-Tarumi, Y., Mckeown, R. & Hopkins, C. 2016. Contributions of Education for Sustainable Development (ESD) to Quality Education: A Synthesis of Research. *Journal of Education for Sustainable Development*. 10(2):226–242.
- Le Blanc, D. 2015. Towards Integration at Last? The Sustainable Development Goals as a Network of Targets. *Sustainable Development*. 23(3):176–187.
- Leavy, A.M. & Hourigan, M. 2016. Using lesson study to support knowledge development in initial teacher education: Insights from early number classrooms. *TEACHING AND TEACHER EDUCATION*.
- Lethoko, M. 2014. Children and youth as agents of climate change impact in South Africa. 12(1):75–91. [Online], Available: http://journals.co.za/docserver/fulltext/cydev/12/1/cydev_v12_n1_a6.pdf?expires=1508005082&id=id&accname=57845&checksum=A635486222BECA690110CB2917099ACB [2017, October 14].
- Lillard Angeline Stoll. 2007. *Montessori: The Science behind the Genius - Angeline Stoll Lillard* - Google Books. [Online], Available: <https://books.google.co.za/books?lillard+2007+Montessori&f=false> [2017, October 25].

Lo, S., Das, P. & Horton, R. 2017. A good start in life will ensure a sustainable future for all. *The Lancet*. 389(10064):8–9.

Lopata, C. Wallace, N and Finn, K (2005) Comparism of academic achievement between Montessori and Traditional educational programmes *Journal of Research in Childhood Education*, 20(1), 5-13

Louv, R. 2008. Paul F-Brandwein Lecture 2007: A Brief History of the Children & Nature Movement. *Journal of Science Education and Technology*. 17(3):217–218.

Louv, R. 2009. Do Our Kids Have Nature-Deficit Disorder? [Online], Available: <http://forestschoollportfolio.com/wp-content/uploads/2015/08/DoOurKidsHaveNature-DeficitDisorderLouv.pdf> [2017, October 25].

Louv, R. 2011. Reconnecting to Nature in the Age of Technology. *The Futurist*. [Online], Available: <https://search.proquest.com/docview/900104324/fulltextPDF/9F0CE3E7C394630PQ/1?accountid=14049> [2017, October 14].

Lovelock, J. 2014. *A rough ride to the future*. The Overlook Press, 2015. [Online], Available: https://books.google.co.za/books?id=QWsjCQAAQBAJ&dq=lovelock+2014+a+rough+ride+to+the+future&lr=&source=gbs_navlinks_s [2017, October 25].

Lynch, Eleanor W. (Ed) Hanson, M.J. (Ed). n.d. *Developing cross-cultural competence: A guide for working with young children and their families*. [Online], Available: <http://psycnet.apa.org/record/1992-97525-000> [2017, October 14].

Mabeba, N. 2017. Personal Interview. 25 May 2017

MacDonald, M. 2015. Early Childhood Education and Sustainability: A Living Curriculum. *Childhood Education*. 91(5):332–341.

Maree, & Maree, Kobus. (2012). Complete your thesis or dissertation successfully: Practical guidelines.

Margetts Kay. 2011. *Book Review: Montessori and Early Childhood: A Guide for Student*.

Marshall B. Rosenberg. 2003. *Life-enriching Education: Nonviolent Communication Helps Schools Improve ... - Marshall B. Rosenberg - Google Books*. [Online], Available: <https://books.google.co.za/books?id=hnzIAwAAQBAJ&printsec=frontcover&dq=rose>

nberg+2003&hl=en&sa=X&ved=0ahUKEwj9h86P-
lvXAhWDUBQKHRgUCcgQ6AEIPzAE#v=onepage&q=rosenberg 2003&f=false
[2017, October 25].

Mårtensson, F., Boldemann, C., Söderström, M., Blennow, M., Englund, J.-E. & Grahn, P. 2009. Outdoor environmental assessment of attention promoting settings for preschool children. *Health & Place*. 15(4):1149–1157.

Mawson, W.B. 2014. Experiencing the “wild woods”: The impact of pedagogy on children’s experience of a natural environment. *European Early Childhood Education Research Journal*. 22(4):513–524.

Maxwell, J. 2012. *Qualitative Research Design: An Interactive Approach* - Joseph A. Maxwell - Google Books. [Online], Available:
<https://books.google.co.za/books?hl=en&lr=&id=xAHCOmtAZd0C&oi=fnd&pg=PR5&dq=maxwell+2012&ots=Y1AUnosfm-&sig=GT39vsKn-B3vFqX2beYvnQRm7hk#v=onepage&q=maxwell 2012&f=false> [2017, October 14].

May, P.A., Gossage, J.P., Marais, A.-S., Adnams, C.M., Hoyme, H.E., Jones, K.L., Robinson, L.K., Khaole, N.C.O., et al. 2007. The epidemiology of fetal alcohol syndrome and partial FAS in a South African community. *Drug and Alcohol Dependence*. 88:259–271.

McCall, A.L. 2017. Teaching Children about the Global Economy: Integrating Inquiry with Human Rights. *The Social Studies*. 108(4):136–142.

McCurdy, P. & Uldam, J. 2014. Connecting Participant Observation Positions. *Field Methods*. 26(1):40–55.

McLaren, P. (2003), *Life in Schools: An Introduction to Critical Pedagogy in the Foundations of Education*, 4th ed., Allyn and Bacon, New York, NY.

Mehra, B. 2002. Biases in Qualitative Research: Voices from an Online Classroom. *The Qualitative Report*. 7 (1), 1-19.

Meier, C., Lemmer, E. & Niron, D.G. n.d. J A A S Problems and Prospects in Early Childhood Education Provisioning in Turkey and South Africa. *Journal of Asian and African Studies*. 1–14.

Moeketsi Letseka1. 2003. *Commonwealth youth and development*. Vol. 8. University of South Africa. [Online], Available:
<https://journals.co.za/content/cydev/8/1/EJC30897> [2017, October 14].

Montessori M (1949/1982) *The Absorbent Mind*, 8th edn. Madras: Kalakshetra Publications

Mouton, J. (Johann). 2001. *How to succeed in your master's and doctoral studies: A South African guide and resource book*. Van Schaik. [Online], Available: https://books.google.co.za/books?id=uX4lAQAAIAAJ&q=mouton+2001&dq=mouton+2001&hl=en&sa=X&ved=0ahUKEwjHp-3V-u_WAhUjl8AKHQ6-B6AQ6AEIKjAB [2017, October 14].

Mtshengu, G. 2017. Personal Interview. 17 May 2017

Murray, J. 2015. Early childhood pedagog ies : spaces for young children to flourish. *Early Child Development and Care*. 185(11–12):1715–1732.

Neurophysiological correlates of attention behavior in early infancy: Implications for emotion regulation during early childhood. 2016. *Journal of Experimental Child Psychology*. 142:245–261.

New policy brief: Early Childhood Development in the SDGs — Young Lives. n.d. [Online], Available: <http://younglives.queh.ox.ac.uk/publications/PP/early-childhood-development-in-the-sdgs> [2017, October 14].

Ngxiza, S. 2012. Sustainable Economic Development in Previously Deprived Localities: The Case of Khayelitsha in Cape Town. *Urban Forum*.

Nurturing care: promoting early childhood development. 2017. *The Lancet*. 389(10064):91–102.

Communications, D. 2014. South Africa yearbook 2013/14 legislation and frameworks. [Online], available: http://www.southafrica-newyork.net/consulate/yearbook_2014/2013-4social_development.pdf [2017, october 25].

Ontong, K. & Le Grange, L. 2015. The need for place-based education in South African schools: The case of Greenfields Primary. *Perspectives in Education*. 33(3). [Online], Available: <http://www.perspectives-in-education.com>.

Pagels, P., Raustorp, A., De Leon, A.P., Mårtensson, F., Kylin, M. & Boldemann, C. 2014. A repeated measurement study investigating the impact of school outdoor environment upon physical activity across ages and seasons in Swedish second, fifth and eighth graders. *BMC Public Health*. 14(1):803.

- Palmer, T.B. & Flanagan, D.J. 2016. Journal of Business Strategy The sustainable company: looking at goals for people, planet and profits. *Journal of Business Strategy Journal of Business Strategy Iss Journal of Business Strategy Iss*. 37(12):28–38.
- PART 2 Essential services for young children". n.d. [Online], Available: http://www.ci.uct.ac.za/sites/default/files/image_tool/images/367/Child_Gauge/South_African_Child_Gauge_2013/Gauge2013EcdNextSteps.pdf [2017, October 14].
- Passi Gouri Rao. 2009. Nature Deficit Disorder. *INDIAN PEDIATRICS*. 46. [Online], Available: <http://medind.nic.in/ibv/t09/i9/ibvt09i9p821.pdf> [2017, October 25].
- Patten, M.L. & Bruce, R.R., 2009. *Understanding research methods: an overview of the essentials* 7th ed., Glendale, Calif.: Pyrczak Pub.
- Pearson, E. & Degotardi, S. 2009. Education for sustainable development in early childhood education: a global solution to local concerns? *International journal of early childhood*. 41(2). [Online], available: <https://link.springer.com/content/pdf/10.1007%2fbf03168881.pdf> [2017, october 14].
- Pezzoli, K. 1997. Sustainable Development: A Transdisciplinary Overview of the Literature. *Journal of Environmental Planning and Management*. 40(5):549–574.
- Pramling Samuelsson, I. 2011. Why We Should Begin Early with ESD: The Role of Early Childhood Education. *International Journal of Early Childhood*. 43(2):103–118.
- Prochner, L., Cleghorn, A. & Green, N. 2008. Space considerations: materials in the learning environment in three majority world preschool settings. *International Journal of Early Years Education*. 16(3):189–201.
- Randy White & Vicki L. Stoecklin. 2008. Nurturing children's biophilia: developmentally appropriate environmental education for young children. *White hutchinson leisure & learning group*. [online], available: https://www.researchgate.net/profile/randy_white/publication/237223951_nurturing_children's_biophilia_developmentally_appropriate_environmental_education_for_young_children/links/545141ed0cf24884d886fd61.pdf [2017, october 15].
- Rangan. K & Lee. K. 2010. Bridge International Academies: A School in a Box. *Harvard Business Review*. 25. [Online], Available: <https://hbr.org/product/Bridge-International-Acad/an/511064-PDF-ENG> [2017, October 25].

Ranjit Kumar. 2014. *Research Methodology: A Step-by-Step Guide for Beginners - Ranjit Kumar - Google Books*. SAGE. [Online], Available: https://books.google.co.za/books/about/Research_Methodology.html?id=MKGVAgAAQBAJ&redir_esc=y [2017, October 14].

Remenyi, D. n.d. *Case Study research*. [Online], Available: https://books.google.co.za/books?id=TskRBAAAQBAJ&dq=remenyi+2012&source=gb_s_navlinks_s [2017, October 14].

Renton, Z. & Butcher, J. 2010. Securing a Sustainable Future for Children and Young People. *Children & Society*. 24(2):160–166.

Resolution, A., 2015. RES/70/1. Transforming our world: the 2030 agenda for sustainable development. Seventieth United Nations General Assembly, New York, 25.

Rhodes, J. & Lowe, S.R. 2008. Youth Mentoring and Resilience: Implications for Practice. *Child Care in Practice*. 14(1):9–17.

Richards, Janet C. Morse, T.E. 2002. One Preservice Teacher's Experiences Teaching Literacy to Regular and Special Education Students. *Reading Online*. 5(10). [Online], Available: <https://eric.ed.gov/?id=ED469947> [2017, October 14].

Richter, L.M., Daelmans, B., Lombardi, J., Heymann, J., Boo, F.L., Behrman, J.R., Lu, C., Lucas, J.E., et al. 2017. Investing in the foundation of sustainable development: pathways to scale up for early childhood development. *The Lancet*. 389(10064):103–118.

Robert K. Yin. 2011. *Qualitative Research from Start to Finish, First Edition - Robert K. Yin - Google Books*. [Online], Available: https://books.google.co.za/books?id=lyCGBeo8sl8C&dq=yin+2011&source=gbs_navlinks_s [2017, October 14].

Rogers, M. 2005. Social sustainability and the art of engagement—the small towns: big picture experience. *Local Environment*. 10(2):109–124.

Rogers, P.P., Jalal, K.F. & Boyd, J.A. 2008. *An introduction to sustainable development*. Earthscan. [Online], Available: <https://books.google.co.za/books?id=GZ4Pvk0LVQMC&dq=Sustainable+economic+development+is+directly+concerned+with+increasing+the+standard+of+living+of+the+poor,+which+can+be+measured+in+terms+of+increased+food,+real+income,+education,+health+care,+water+supply+and+sanitation+and+only+indirectly+concerned+>

with+economic+growth+at+the+aggregate&source=gbs_navlinks_s [2017, October 25].

Rogerson, C.M. 2016. Climate change, tourism and local economic development in South Africa. *Local Economy*.

Sandiford, P.J. & Seymour, D. 2007. A discussion of qualitative data analysis in hospitality research with examples from an ethnography of English public houses. *Hospitality Management*. 26:724–742.

Saunders, F.P. 2015. Planetary boundaries: At the threshold... again: Sustainable development ideas and politics. *Environment, Development and Sustainability*.

Saunders, S., Koenig Seguin, C. & Associate Professor, E. n.d. Education for Sustainability: A Transformative Paradigm for Teacher Education. The Curriculum and Resource Center: Where Sustainability and Standards Meet. [Online], Available: [http://crc.creativechange.net/ckfinder/userfiles/files/Integrating sustainability into teacher education \(1\).pdf](http://crc.creativechange.net/ckfinder/userfiles/files/Integrating%20sustainability%20into%20teacher%20education%20(1).pdf) [2017, October 14].

Schulschenk, J. 2017. Personal Interview. 25 May 2017

Selby, D. & Kagawa, F. n.d. OPINION ESSAY Runaway Climate Change as Challenge to the “Closing Circle” of Education for Sustainable Development. 4(1):37–50.

Selby, D. 2006. The Firm and Shaky Ground of Education for Sustainable Development. *Journal of Geography in Higher Education*. 30(2):351–365.

Seymour, W. n.d. Exhuming the Body: Revisiting the Role of the Visible Body in Ethnographic Research.

Siraj-Blatchford, J. (2008). The implications of early understanding of inequality, science and technology for the development of sustainable societies. The contribution of early childhood education to a sustainable society (pp. 67-72). Retrieved 15 May 2017 from: http://www.oei.es/decada/unesco_infancia.pdf.

Smith, G.A. 2002. Place-Based Education. [Online], Available: <http://journals.sagepub.com/doi/pdf/10.1177/003172170208300806> [2017, October 15].

Sobel, D. n.d. Place-based Education: Connecting Classroom and Community. [Online], Available: <http://www.kohalacenter.org/teachertraining/pdf/pbexcerpt.pdf> [2017, October 15].

Source Book: Education for Sustainable Development Education for Sustainable Development in Action. 2012. UNESCO. [Online], Available: <http://unesdoc.unesco.org/images/0021/002163/216383e.pdf> [2017, October 25]. SAGE, 19 Jun 2017 - Education – 214-215

South African Association for the Advancement of Education. C., Luger, R., Bullen, A., Phillips, D. & Geiger, M. 2013. *South African journal of education = Suid-Afrikaanse tydskrif vir opvoedkunde*. Vol. 33. South African Association for the Advancement of Education. [Online], Available: http://www.scielo.org.za/scielo.php?pid=S0256-01002013000400009&script=sci_arttext&lng=pt [2017, October 14].

Spies, M. 2010. Early Childhood Development as a pathway to sustainable community development. Stellenbosch: Stellenbosch University. MPhil Thesis.

Standing, E.M. and Montessori, M., 1957. *Her life and work*. Hollis & Carter.

Standing, E.M., 1998. *Maria Montessori, her life and work*. NAL.

Stellenbosch Integrated Development Plan. 2015. [Online], Available: <http://stellenbosch.gov.za/documents/idp-budget/2015/2334-draft-idp-20152016-march-2015/file> [2017, October 25].

Steyn, M.G., Harris, T. & Hartell, C.G. 2014. Institutional factors that affect black South African students' perceptions of Early Childhood Teacher Education. *South African Journal of Education*. 34(7). [Online], Available: <http://www.sajournalofeducation.co.za> [2017, October 14].

Sustainability Institute (SI) 2017. [Online] Available at www.sustainabilityinstitute.net (September 2017)

Sutton, A. 2009. Educating for Ecological Sustainability: Montessori Education Leads the Way, Montessori Life: A Publication of the American Montessori Society, 2009. *American Montessori Society*. [Online], Available: <https://eric.ed.gov/?id=EJ867851> [2017, October 14].

Swanborn, P. 2010. *Case Study Research : What, Why and How?*. Sage Publications. [Online], Available: https://books.google.co.za/books?id=DvyvGmSscQMC&dq=swanborn+2010&source=gbs_navlinks_s [2017, October 14].

- Swilling, M. & Annecke, E. 2006. Building sustainable neighbourhoods in South Africa: learning from the Lynedoch case. *Environment and Urbanization*.
- Swingler, H. 2013. Life in a thousand days. Newspaper of the University of Cape Town. October 2013.
- Taylor, C.L., Jose, K., van de Lageweg, W.I. & Christensen, D. 2017. Tasmania's child and family centres: a place-based early childhood services model for families and children from pregnancy to age five. *Early Child Development and Care*. 187(10):1496–1510.
- The Natural Learning Initiative. 2012. *Benefits of Connecting Children with Nature*. [Online], Available: [https://naturalearning.org/sites/default/files/Benefits of Connecting Children with Nature_InfoSheet.pdf](https://naturalearning.org/sites/default/files/Benefits%20of%20Connecting%20Children%20with%20Nature_InfoSheet.pdf) [2017, October 25].
- The World Bank. 2010. FAQ's: Early Childhood Development. *Africa Region Human Development*. [Online], Available: <http://siteresources.worldbank.org/extra/regiontopeducation/resources/444707-1291071725351/eccd-factsheet-final.pdf> [2017, October 25].
- Tina Bruce, Carolyn Meggitt, J.G. 2013. *CACHE Level 3 Child Care and Education, 2nd Edition - Tina Bruce, Carolyn Meggitt, Julian Grenier - Google Books*. [Online], Available: https://books.google.co.za/books?id=s7iLFyLwLzcC&dq=Tina+Bruce+2013+on+education&source=gbs_navlinks_s [2017, October 25].
- Tobin, T., Boulmier, P., Zhu, W., Hancock, P. & Muennig, P. 2015. Improving Outcomes for Refugee Children: A case study on the impact of Montessori education along the Thai-Burma border. *International Education Journal: Comparative Perspectives*. 14(3):122–133. [Online], Available: <https://openjournals.library.sydney.edu.au/index.php/IEJ/article/view/8887> [2017, October 25].
- UNICEF. 2015. The South African national curriculum framework for children from birth to four comprehensive version the South African national curriculum framework for children from birth to four February 2015. [Online], available: www.education.gov.za [2017, October 25].
- UN Sustainable Development Solutions Network (SDSN). 2017. *Sustainable Development Solutions Network | Vision and Organization*. [Online], Available: <http://unsdsn.org/about-us/vision-and-organization/> [2017, October 26].

- Vaismoradi, M., Jones, J., Turunen, H. & Snelgrove, S. 2016. Theme development in qualitative content analysis and thematic analysis. *Journal of Nursing Education and Practice*. 6(5).
- Van Der Spuy, E. & Armstrong, A. n.d. Policing of an urban periphery: The case of Khayelitsha.
- Van der Walt, J.P., Swart, I. & De Beer, S. (in press). Informal community-based early childhood development as a focus for urban public theology in South Africa. *HTS Teologiese Studies / Theological Studies*. 70(3):16 pages.
- Van der Walt, J.P.H., Swart, I. & de Beer, S. 2014. Informal community-based early childhood development as a focus for urban public theology in South Africa. *HTS Teologiese Studies / Theological Studies*.
- Venkataraman, B. 2009. Environment: Science and Policy for Sustainable Development Education for Sustainable Development Education for Sustainable Development What Is Education for Sustainable Development?
- Voortman, L. 2017. Personal Interview. January-July 2017
- Webster, K. 2013. Missing the wood for the trees: systemic defects and the future of education for sustainable development. *Curriculum Journal*. 24(2):295–315.
- Webster, K., 2004. *Rethink refuse reduce...: education for sustainability in a changing world*. FSC Publications.
- Wensing, E. & Torre, C. 2009. The Ecology of Education: Knowledge Systems for Sustainable Development and Sustainability. *Journal of Teacher Education for Sustainability*. 11(1):3–17.
- Weybright, E.H., Caldwell, L.L., Xie, H., Wegner, L. & Smith, E.A. 2017. Predicting secondary school dropout among South African adolescents: A survival analysis approach. *South African Journal of Education*. 37(11).
- White, M.D. & Marsh, E.E. 2006. Content Analysis: A Flexible Methodology. *Library Trends*. 55(1):22–45.
- White, R. 2004. Interaction with nature during the middle years: its importance to children's development & nature's future. *White hutchinson leisure & learning group*. [Online], available:

<https://www.whitehutchinson.com/children/articles/downloads/nature.pdf> [2017, october 15].

Wiens, J.J. 2016. Climate-Related Local Extinctions Are Already Widespread among Plant and Animal Species. *PLOS Biology*. 14(12):e2001104.

Wiens, J.J. n.d. Climate-Related Local Extinctions Are Already Widespread among Plant and Animal Species.

Williams, T. 2001. *The NATIONWIDE AUDIT of ECD Provisioning in South Africa*.

Woodhead, M. 2016. Early Childhood Development in the SDGs. [Online], Available: <http://oro.open.ac.uk/45507/> [2017, October 14].

Yilzid, T & Funda, T. 2011. Environmental reporting of environmental and supply chain business process within the context of sustainable development. The Free Library.